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EXPLANATORY NOTES

FOR

DEPARTMENT OF AGRICULTURE

BUDGET ESTIMATES

FISCAL YEAR

1943

CONTENTS

C O N T E N T S

(Volume 4)

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation Act, 1942, plus $1,892 supplemental for within-grade promotions	$167,872
Budget estimate, 1943	167,165
Change from 1942:	
Net reduction in working funds	- 1,980
Additional for administrative promotions	+ 1,273
Net decrease	- 707

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. General administration and business service	$164,999	$165,980	$164,000	- $1,980 (1)
2. Net cost of within-grade promotions	- -	1,892	3,165	+ 1,273
Unobligated balance	981	- -	- -	- -
Total appropriation	165,980	167,872	167,165	- 707

DECREASE

(1) The decrease in working funds of $1,980 in this item for 1943 contemplates a reduction in the expenditures for supplies, materials, equipment, and travel.

WORK UNDER THIS APPROPRIATION

Objective: To determine policies and provide leadership and direction for the Bureau's program as well as to provide for service activities such as business operations, educational work and library facilities.

The problem and its significance: In an organization with so large and broad a subject matter field as the Bureau of Entomology and Plant Quarantine it is essential that policies be established on a broad basis and that there be proper over-all direction and supervision of the various work programs. It is also necessary to provide service facilities through units having a knowledge and appreciation of the work of the various subject matter divisions so as to enable them to deal intelligently with the problems encountered in their respective fields. Inadequate planning or execution in connection with any of these functions will have a retarding effect on the operations of the Bureau in general and may seriously handicap working programs of vital concern to the agricultural interests of the country.

General plan: The funds provided under this appropriation are used for general administrative purposes comprised of the following functions: (a) determination of policies; (b) general administrative supervision of all departmental and field activities; (c) business operations; (d) the approval and preparation for publication of manuscripts concerned with the scientific, technical and other activities of the Bureau; (e) the preparation and distribution of general information on control of insect pests; (f) the maintenance of a comprehensive library of entomological literature and the preparation of bibliographies on entomological subjects, and (g) the handling of general information relating to federal quarantines and the preparation of cases on quarantine violations.

SUPPLEMENTAL FUNDS

Direct Allotment

Project	Allotments 1941	estimated allotments, 1942
Emergency Relief Appropriation Act of 1941 and 1942:		
For administration of emergency work relief projects set forth under the various headings in the following notes and summarized at the end hereof	$178,150	$81,393
For planning and review of W.P.A. projects	- -	3,510
Total	178,150	84,903

(b) FRUIT INSECTS

Appropriation Act, 1942, plus $3,720 supplemental for within-grade promotions	$428,320
Budget estimate, 1943	390,285
Change from 1942:	
Net reduction in working funds	- 42,600
Additional for administrative promotions	+ 4,565
Net decrease	- 38,035

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
Investigations on:				
1. Apple and pear insects	$89,747	$90,670	$88,410	- $2,260(1)
2. Peach insects	52,126	52,869	47,100	- 5,769(2)
3. Grape insects	10,406	10,995	- -	- 10,995(3)
4. Nut insects	25,349	26,500	13,924	- 12,576(4)
5. Insects attacking dried fruits	15,669	16,002	16,002	- -
6. Citrus and other subtropical fruit insects	40,231	41,020	37,020	- 4,000(5)
7. Fruit flies which are potential pests in continental United States	74,953	75,411	68,411	- 7,000(6)
8. The insecticidal value of oils	4,979	5,120	5,120	- -
9. Japanese and Asiatic beetles	105,480	106,013	106,013	- -
10. Net cost of within-grade promotions	- -	3,720	8,285	+ 4,565
Unobligated balance	5,660	- -	- -	- -
Total appropriation	424,600	428,320	390,285	- 38,035

DECREASES

The decrease in working funds of $42,600 in this item for 1943 consists of:

(1) A decrease of $2,260 in the project "Investigations on apple and pear insects". This contemplates a curtailment of the work done at Beltsville, Maryland on investigations on insecticides for codling moth control.

(2) A decrease of $5.769 on the project "Peach insect investigations". This contemplates discontinuance of investigations on plum circulio and San Jose Scale with the closing of the laboratory at Fort Valley, Georgia.

(3) A decrease of $10,995 on the project "Grape insect investigations". This contemplates discontinuance of all work on the project with the closing of the laboratory at Sandusky, Ohio.

(4) A decrease of $12,576 on the project "Nut insect investigations". This contemplates (1) curtailment of investigations on the hickory shuck worm on pecans with the closing of the laboratory at Albany, Georgia; (2) curtailment of investigations on the pecan casebearer and other miscellaneous pecan insects with the closing of the laboratory at Brownwood, Texas.

(5) A decrease of $4,000 on the project "Investigations on citrus and other subtropical fruit insects". This contemplates the discontinuance of work with sulphur for the control of thrips and scales on insects and will curtail the work of the Whittier, California laboratory.

(6) A decrease of $7,000 in the project "Investigations on fruitflies which are potential pests in the Continental United States". This contemplates the discontinuance of fruitfly work in Puerto Rico.

WORK UNDER THIS APPROPRIATION

Objective: To develop means whereby the growers of fruits and nuts can control insect pests more effectively or more economically, thus increasing the net returns from their operations and insuring the consuming public an ample supply of fruit of high quality. In addition in the case of the Japanese beetle to develop methods whereby home owners may protect their gardens and ornamental plantings from attack by the insect; to develop methods whereby the movement of various agricultural products from infested to uninfested territory may be made without danger of spreading the insect; to stimulate to the fullest possible extent the parasites and diseases which tend to control the insect.

The problem and its significance: Fruits and nuts are crops of major importance in the United States, the farm value of some of the more important of which were reported in 1939 as follows: Citrus fruits, $118,000,000; apples, $92,000,000; peaches, $47,000,000; grapes, $42,000,000, pears, $21,000,000. The value of fruits in a well-balanced national diet is receiving increasing recognition, especially during the present national emergency, and it is essential that an adequate supply of fruit be available to the consuming public.

All of the fruit crops are subject to serious attack by insect pests. Some of the major losses, including the cost of control measure, have been estimated as follows: Codling moth, $31,000,000; plum curculio, $10,000,000; San Jose scale, $7,380,000.

Losses by the Japanese beetle are difficult to estimate on a financial basis, since a great deal of damage occurs to shade trees, ornamental shrubbery, and in flower gardens, where the injury does not represent a reduction in the owner's income. However, a WPA survey made in 1934 indicated a loss of nearly a million dollars to growers of farm crops in one New Jersey county alone. This means that this one insect must cause a total damage to crops over the entire infested area of many millions of dollars.

General plan: The research work on fruit insects and on the Japanese beetle is carried on at 23 field laboratories, which are maintained at suitable locations, mostly in the producing areas where the particular insect problem to be investigated is especially serious. Much of the work is cooperative with State Agricultural Experiment Stations or other State agencies, and in several cases is carried on cooperatively by two or more divisions of this bureau.

The investigations on fruit insects are carried on under 9 financial projects, 6 of which deal with the insects affecting (a) apples and pears, (b) peaches, (c) grapes, (d) nuts, (e) dried fruits, and (f) citrus and other subtropical fruits. In addition there is a financial project dealing with fruit flies which are potential pests in the continental United States, one on the insecticidal value of oils, and another relating to the problem of the Japanese and Asiatic beetles.

Examples of progress and current program: The discussions which follow will indicate the present trend of the work under the respective financial projects and will outline briefly some of the recent accomplishments.

Investigations on apple and pear insects: Major attention under this financial project is given to the codling moth problem, in an effort to develop an insecticide or other means of control less objectionable and more effective than lead arsenate. Although the recent liberalization of the tolerances for lead arsenic has eased the residue situation a little, this does not offer a permanent solution of the codling moth problem, since growers in many localities where conditions favor the insect are finding lead arsenate, the standard insecticide for codling moth control, to be inadequate, and the build-up of arsenic in the soil is presenting an additional problem in some localities. In spite of the application of 8 or more sprays during the season at a cost of $50 or more per acre, many growers are finding it almost impossible to control the worms. A more effective insecticide is an extremely urgent need.

The tank-mix nicotine-bentonite-soybean oil combination developed by the Bureau at Vincennes, Ind. for codling moth control continues to give outstanding results in the Middle West although it is apparently much less satisfactory in the Northwest and East. Unfortunately, however, the problem still remains of working out a program that will permit the use of fungicides with this material for the control of apple diseases. The fungicides now in common use reduce very seriously the effectiveness of nicotine bentonite in codling moth control. Although the initial cost of a nicotine program is greater than that of one employing lead arsenate, the results in worm control in the Middle West have been enough better to warrant the additional cost. However, in using this material, the growers have been obliged to take chances on the control of apple diseases.

Two other compounds, phenothiazine and xanthone, have shown promise for codling moth control. Experiments have shown their potential value, and also certain difficulties in their use. Although these may not come into practical use themselves, they may point the way to the development of an effective substitute for lead arsenate.

A recent modification of the apple and pear insect research program has been the undertaking of work with Comstock's mealybug. This insect has recently assumed considerable importance in numerous apple orchards from South Carolina to Ohio and Connecticut. The chief damage caused by this insect is the production of a sweet sticky substance called honeydew, which covers the twigs, leaves and fruit. This supports the growth of a sooty mold or fungus which covers the fruit and causes it to color poorly. The coating of honeydew and sooty mold is also very difficult to remove, so that severely affected fruit is very much reduced in value or becomes unmarketable. The Bureau has brought in several parasites from the Orient, where the mealybug seems to be under a fair degree of natural control. These parasites have been liberated and established in a number of infested orchards, and one parasite species has built up rapidly, parasitizing as much as 40% of the mealybug population.

In order to release funds to strengthen the mealybug work, the light trap experiments for codling moth control in New York State have been discontinued. Light traps catch large numbers of moths and effect marked reductions in population but their utilization in practical orcharding at their present stage of development would not be profitable because of the high cost of installation and maintenance.

The decision was made in May 1941 to discontinue the work of the St. Joseph, Mo. laboratory in order to permit undertaking a study of a newly introduced scale insect (Parlatoria chinensis (Marl.) at St. Louis, Mo. This scale insect was found in a limited area of St. Louis in 1940, the infestation centering in and around the Missouri Botanical Garden. There was an urgent need for information on the biology of the insect and for the development of insecticide materials that might be used as a basis for control. Therefore, the field leader in charge and the equipment of the St. Joseph laboratory were transferred to St. Louis, where a study of this introduced scale insect is now under way, in cooperation with several Missouri State and local agencies.

Peach insect investigations: One of the most recent accomplishments under this project has been the development by the Fort Valley, Ga. laboratory of an ethylene dichloride emulsion as a control for the peach borer. Present information indicates that during 1940 growers used at least 800,000 pounds of ethylene dichloride, or enough to treat nearly 6 million mature peach trees. For the most part the results have been very satisfactory, although during the summer of 1940 a number of cases of injury attributed to the use of ethylene dichloride emulsion were reported from peach orchards in Virginia, Pennsylvania, and Michigan, and in other Middle Atlantic States. A careful investigation of most of these reports has shown that in the great majority of the orchards in which injury occurred the real cause was sudden drops in temperature in preceding winters. In a few orchards there appears to be some possibility that ethylene dichloride has been the direct cause of injury, has intensified a condition caused originally by winter injury, or has been a factor that has contributed to winter injury. A series of experiments is being carried on at Beltsville, Md. in cooperation with the Bureau of Plant Industry, to determine the soil conditions that may result in injury to peach trees by ethylene dichloride.

Continued work has been done with the parasites of oriental fruit moth, a major pest of peach occurring in the eastern half of the United States for which no effective insecticide has been developed. An important eastern parasite has been recolonized throughout the infested area and in many localities has reduced the fruit moth infestation to a low point. In other localities, and in some seasons, however, the parasites are not sufficiently effective to prevent considerable injury. Recent experimental work has dealt with the liberation of parasites in the early season, in the effort to protect the fruit that matures the latter part of the summer of the same year. For the fourth year mass liberations of this parasite have given a considerably lower average infestation than that existing in orchards not receiving the additional parasites. Much of the work now deals with the development of methods for the economical production of this parasite in the early season areas. Such methods could be used by private enterprise or by associations of growers to take care of the oriental fruit moth problem.

The survey work to determine the possible insect vectors of the phony-peach disease and peach mosaic has been continued. These diseases, which occur in certain areas of the United States, are of sufficient importance to the industry to warrant programs carried on by the Department to prevent their further spread, and to eradicate them if possible. It is believed that these diseases are transmitted by insects. Extensive tests to determine what insects may be responsible for the transmission of these diseases are well under way at East Chattanooga, Tenn., Brownwood, Texas, and San Bernardino, Calif. No definite proof incriminating any one insect has yet been obtained, although preliminary tests indicate that certain species of aphids are to be considered highly suspicious in the case of peach mosaic.

Grape insect investigations: Continued efforts have been made to develop methods of control for the grape berry moth in northeastern United States, since the former method, which involved the application of several sprays of lead arsenate, results in excessive residues at harvest time. In small-scale field experiments certain substitutes have been used with promising but not conclusive results

In large field experiments a factory-prepared nicotine bentonite containing 14% of nicotine, used throughout the season, gave a fair degree of control of the grape berry moth but would be rather expensive for general use. Since it appears to be more effective against second brood than against the first brood, a "split" program of arsenicals in the early season, followed by the nicotine bentonite, may prove to be more practical.

Nut insect investigations: Progress has been made toward the development of cultural methods of controlling the hickory shuck worm on pecan. Insecticides have never been found of value in the control of this pest. A number of years ago experiments with cultural control which were carried on chiefly in spring and very early summer, gave negative results. Experiments carried out at Albany, Ga. during 1940 showed that much of the emergence of the moths, and the build-up of infestation during July

and August when the greatest destruction occurs, may be prevented if during that period infested fallen nuts in the orchard are buried in the soil, even to a depth of two inches. The best method of accomplishing this has been found to be the use of a disk-tiller type of implement. The use of this type of implement in two pecan orchards indicated a reduction of 50 to 65% in infestation by the shuck worm. Further experimental work with this implement is needed.

Preliminary experiments with the control of the nut casebearer, carried on at Monticello, Fla. have indicated that spraying with arsenicals in the month of July, as is done for the control of the leaf casebearer, may be of considerable value in reducing infestation by the nut casebearer the following spring.

Further studies have been made at Eugene, Oreg. of the biology of the filbert worm. Although the infestation of filberts in the Northwest by this insect remains light, marked increases in worm abundance occurred at a number of points and 20% more orchards reported damage than in previous years.

Dried fruit insect investigations: The Fresno, Calif. Dried Fruit Insect laboratory has continued to place major emphasis on the prevention of insect infestation in dried fruits both during the process of drying and while in storage on the ranch. This is preferable to allowing the product to become heavily infested and then attempting control by fumigation in the larger warehouses. Observations made by the Fresno laboratory showed that the saw-toothed grain beetle, one of the most destructive of the storage pests, does not fly to any extent and that to reach stacks of raisins in boxes, the insects must crawl. Taking advantage of this habit, experiments have been carried on with the use of oil-filled trough barriers to prevent infestation by this insect. This practice was found to be partially effective and it is believed that better protection can be obtained by the use of a different type of barrier.

Several possible methods of fumigating dried fruit in small units on the ranch at the end of the sun-drying period have been carried on near Fresno, Calif. Methyl bromide, paradichlorobenzene and dichloroethyl ether have been used for this purpose with very promising results. In some cases the applications have been made to the fruit in rolled paper trays and in other cases in bags or in the sweat boxes.

The influence of waste mulberries on infestation by the raisin moth has been studied further. In some localities such fruit is an important factor in maintaining the raisin moth infestations at a high level.

Investigations on citrus and other subtropical fruit insects: The Whittier, Calif. laboratory has given major attention to the control of the California red scale, one strain of which is very resistant to fumigation with hydrocyanic acid. Resistant and nonresistant stocks, maintained in the laboratory for sic years, have retained their wide differences in susceptibility to fumigation. Comparative experiments were made with preliminary treatments of gas at very low dosages, which in many

cases bring about "protective stupefaction", preventing satisfactory results with later fumigations at concentrations normally high enough to give high mortality. In these experiments the stupefying dosage greatly reduced the kill of resistant scales but did not affect the nonresistant strain.

Improvement in the results of cyanide fumigation against the California red scale seems likely to result from the use of a blower to circulate the gas. Past work at the Whittier laboratory and by other organizations has indicated that an immediate high concentration of gas, with a reasonable concentration of gas at the end of the exposure, is necessary for a satisfactory kill, but this is not attained in many commercial exposures. In a series of tests carried on under a commercial canvas tent, it was found that a prompt distribution of gas could be attained by the operation of a blower for 30 seconds. Preliminary tests to determine the value of the blower in red scale control indicated that a more nearly uniform distribution of the gas and a more uniform kill resulted from the use of the blower.

The work on the citrus rust mite in Florida has dealt chiefly with possible improvements on present practices. Confirming earlier results, the more finely divided sulfurs, such as 2000-mesh dust or 4000-mesh wettable sulfur, were definitely more effective and gave longer periods of protection than the ordinary 325-mesh material; this advantage, however, was largely offset by the higher cost of the finer materials. Experiments have been started to determine the influence of cover crops on rust mite populations.

With the citrus thrips, experiments have been carried on by the Whittier, Calif. laboratory with sprays or dusts containing tarter emetic as their active ingredient. In laboratory tests to determine the best proportion of sugar in the tartar emetic-sugar bait spray it was found that the most effective proportion of sugar was from 60 to 90%.

Fruitfly investigations: This work is done in Mexico, Hawaii, Puerto Rico, the Canal Zone, and Texas, with a view to developing (1) knowledge and methods of control for species of fruitflies that threaten Continental United States agricultural industries by introduction, and (2) methods for treating fruits and vegetables to permit these to move safely in the regular channels of trade throughout the United States once infestation is discovered in any part of the States.

New poison sprays are being developed for various injurious species which, due to conditions of movement following the opening of new highways, are extending northward. Several under study have already reached Texas via the Northeast, with resultant damage to the citrus industry. Moving up the West Coast they have covered two-fifths of the distance up that coast and in the center one has just reached Nogales south of New Mexico.

One of the methods perfected for treating products is being applied to citrus in Texas, following discovered infestation there, to permit fruit to move throughout the United States without danger of carrying infestation to other areas. This method not only guarantees fruit safe but cuts down loss during transportation. Trial shipments of fruit and vegetables under treatment from Hawaii have been under way.

New controls for the species injurious to vegetables in Hawaii are being provided. Studies in Puerto Rico have resulted in the release of the citrus industry there from restrictions. Since the methods are often basic they have been adopted by industries in the States, such as in California, and are being tried with good results as far north as New York State.

Investigations on insecticidal value of oils: Because of difficulty in controlling the resistant strain of the California red scale on citrus by fumigation, the use of oils and oil combinations for the control of this pest has continued to receive attention under this project. Because of the danger of injury to citrus from the higher strengths of oil, further work has been done with cube resins in oil at low concentrations. Dosage-mortality tests conducted in 1940 indicated that an increasing porportion of the total spray mixture deposited on the wood became insecticidally active as the deposits increased. These tests also confirmed the results of previous tests, which had indicated that proportionately higher immediate kills were obtained when cube or derris resins were added to light medium oil than when added to heavier oils.

Investigations on Japanese and Asiatic beetles: Special emphasis is now being placed upon the work with the milky disease of the grubs of the Japanese beetle. This disease has in recent years been found to be a major natural control factor in the older infested areas, where the Japanese beetle populations have been markedly reduced. The natural spread of the disease, however, has lagged behind that of the Japanese beetle and the Bureau has therefore endeavored to accelerate its spread. A broad program of distribution of this disease has been undertaken, to include an intensive distribution in turf areas in Government-owned reservations where the Japanese beetle occurs, and spot colonization on non-Government properties at representative points in the beetle infested area where the disease is not already present. As a start in the program of treatment of Federal properties, approximately 1,800 acres of turf on Government-owned land in the District of Columbia and adjacent Virginia were treated with spore-dust material during 1940 and 1941, and more than 2,000 acres were treated at other points from Connecticut to Virginia. The program is now being continued in Government properties at a number of other infested points.

Cooperation was extended to several State agencies in the production of milky disease material for local use. The most comprehensive program of this kind has been carried on by the University of Maryland, which during 1940 and 1941 placed milky disease spore material in more than 12,000 acres of turf land at various points throughout the infested portions of the State.

The recolonization of the imported parasites of the Japanese beetle has been continued. In the spring of 1941, 15,600 adult female parasites of one species were collected at previous liberation points and 139 colonies containing 1,400 parasites were placed in various points in 8 States. Special attention is being given to a Korean strain of one of these parasites, the seasonal history of which is better timed with reference to the development of the Japanese beetle in this country.

Efforts to develop more effective insecticides for use against the Japanese beetle have been continued, chiefly in the laboratory. In the course of this work 1,320 cage tests, involving the use of 3,600 sprayed or dusted plants and 264,000 beetles were made in 1940. Unfortunately none of the new materials showed any special promise.

(c) JAPANESE BEETLE CONTROL

Appropriation Act, 1942, plus $2,805 supplemental for within-grade promotions	$427,805
Budget estimate, 1943	432,275
Change from 1942:	
Additional for administrative promotions	+ 4,470

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase
1. Japanese beetle control operations:				
(a) Supervision of nurseries and greenhouses for Japanese beetle control.....	$186,957	$191,500	$191,500	- -
(b) Scouting adjacent to nurseries and greenhouses for Japanese beetle control.....	29,827	31,000	31,000	- -
(c) Trapping to determine distribution of the Japanese beetle.....	77,600	67,000	67,000	- -
(d) Soil treatment and trapping in isolated areas to aid in preventing spread of the Japanese beetle.....	36,604	39,000	39,000	- -
(e) Farm products inspection for Japanese beetle control.	22,500	22,000	22,000	- -
(f) Vehicular inspection for Japanese beetle control.....	50,320	56,000	56,000	- -
(g) Transit inspection for Japanese beetle control.....	6,850	7,000	7,000	- -
(h) Tests of treatment required for Japanese beetle control.....	11,435	11,500	11,500	- -
2. Net cost of within-grade promotions	- -	2,805	7,275	+ 4,470
Unobligated balance.....	2,907	- -	- -	- -
Total appropriation.....	425,000	427,805	432,275	+ 4,470

WORK UNDER THIS APPROPRIATION

Objective: To prevent the spread of the Japanese beetle to sections of the United States as yet uninfested and to facilitate under proper safeguards the movement from infested to uninfested areas of plants, plant products and other articles which may carry infestation.

The problem and its significance: The Japanese beetle is highly destructive to a wide variety of plants used for food, forage and ornamental purposes. Unfortunately it is now well established in areas where the operation of nurseries and the growing of fruit and truck crops are important industries representing very large investments. However, there are other large areas of similar character in which the insect does not yet occur. The problem is thus a dual one - to protect these areas from infestation while at the same time striving to avoid serious disruption of the shipment of plants, plant products and other articles from the areas already infested. It is particularly important that this work be properly conducted since in the absence of effective Federal regulations uninfested states would be extremely likely to place embargoes on the importation of articles capable of carrying infestation, thus interfering seriously with the ability of growers in infested areas to dispose of their products.

General plan: The area under regulation on account of the Japanese beetle includes parts of Maine, New Hampshire, Vermont, New York, Pennsylvania, Ohio, Maryland, West Virginia, and Virginia, and all of Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, and the District of Columbia. Throughout these areas there must be supervision and inspection of nurseries to insure the proper treatment and handling of products that come within the quarantine. There must also be a regular survey of premises to determine the status of infestation so that correct measures (either piece by piece inspection, treatment, or general permit certification) may be adopted in each case. In addition, points in non-regulated territory considered as likely to be infested by the insect are surveyed through the use of traps, and isolated infestations discovered are dealt with either through quarantine or through arrangements for cooperative control. Vehicular inspection stations are maintained on major highways and arrangements are made for truck, railroad, airplane and mail inspection or treatment of materials as needed. Efforts also are made in cooperation with research units of the Bureau to develop new, safe, and inexpensive treatments of plants and plant products to permit them to meet the requirements of inspection and certification. Practically every state in the regulated area furnishes active cooperation, the total contribution for the fiscal year 1942 amounting to more than $247,000.

Examples of progress and current program: Work under this appropriation divides fairly readily into a number of work projects which will be separately and briefly treated below:

Supervision of nurseries and greenhouses: This work includes the inspection of nursery, ornamental and greenhouse plant materials where infestation by the Japanese beetle exists in the vicinity so that the products may be certified for movement to the non-regulated area. The area under regulation now comprises approximately 122,000 square miles (as compared with 43,000 square miles in 1930). More than 3,600 commercial establishments are involved (compared with 1,600 in 1930), and a number of individuals likewise ship the restricted products. From stations established at central points inspectors visit the various establishments served. These men covered a total of 871,655 miles during 1940.

During the fiscal year 1941, approximately 4,000 square miles were added to the quarantined area and over 50 new establishedments were placed under regulation. Soil removal or chemical treatment certification became necessary in 175 newly infested premises within the area. The inspection service certified nursery and related products for movement with an estimated value above $11,000,000, and at the peak of the shipping season employed 280 inspectors as compared with 271 in 1940.

Scouting adjacent to nurseries and greenhouses: This work involves the scouting of establishments not known to be infested by the Japanese beetle but within the regulated area as a basis for permitting certified shipment without actual product inspection or treatment. The Japanese Beetle Quarantine provides for the certification of restricted materials on an annual basis from uninfested premises within the regulated territory. To determine whether these establishments are infested or free, the premises and the area within 500 ft. of each must be surveyed several times during the flight period of the insect for its presence. There are about 1500 establishments at this time requiring this service.

Trapping to determine the distribution of the Japanese beetle: This work consists of making, distributing and tending traps which capture Japanese beetles. The survey conducted by the use of these traps furnishes the information on the dissemination of the pest needed for revisions in the area under regulation and locates isolated infestations usually before they become centers for further spread. During the past summer (1941) some traps were placed in every State outside of the area under regulation except six - Arkansas, Montana, Nevada, North Dakota, Oklahoma and South Dakota.

Soil treatment and trapping isolated areas to aid in preventing spread of the Japanese beetle: When an infestation of the Japanese Beetle is found in a new locality at some distance from the region under regulation the new area represents another source for spread as well as another place for population increase and damage. In these circumstances, an opportunity is offered the State or other interested agency to control the insect in cooperation with the Federal Government and without necessarily having Federal quarantine restrictions invoked.

The recent reduction of the lead arsenate soil treatment dosage used in control from 1000 lbs. per acre to 500 lbs. and the interest in the new "Milky White" disease (a disease destructive to the grub) is expected to considerably increase the demand for this work. The value of control work in isolated areas is indicated by the fact that infestations in areas treated in Missouri, Illinois, Indiana, Ohio, Michigan, Georgia, North and South Carolina, Virginia and Kentucky have been reduced or have not developed to a significant degree although some have been known to exist for seven or eight years.

Improvements have likewise been made in the mechanical equipment used in the application of the lead arsenate to the soil.

Inspection of fruits, vegetables and cut flowers: This involves seasonal inspection and certification necessary to meet quarantine requirements during the flight season of the Japanese beetle. Operations are carried on in Delaware and the District of Columbia and in parts of Maryland, New Jersey, Pennsylvania and Virginia.

During the fiscal year 1941, 2,854,344 packages of fruits and vegetables and 33,230 packages of cut flowers were certified.

Vehicular inspection for Japanese beetle control: This work involves the establishment of highway and airport inspection points where vehicles and products moving out of the regulated area may be examined and freed from infestation. The inspection points are established where risk of spread seems greatest on main highways leading South and West from the regulated region. To conserve funds, all stations are operated on a seasonal basis confined to the period when danger of transportation of infestation is greatest.

At the commercial airports of Washington, D. C., New York City, Philadelphia and Harrisburg, Pa., inspection is carried on in cooperation with field and airline officials.

During the fiscal year 1940, 22,665 road vehicles were found to be carrying uncertified quarantined articles, and 12,553 in the fiscal year 1941.

Transit inspection for Japanese beetle control: This work project consists of a check maintained on shipments by way of parcel post, freight and express to ascertain compliance with the Japanese Beetle Quarantine regulations.

Tests of treatments: This work is designed to provide means of developing new and improved treatments of products, movement of which is restricted under the Japanese Beetle Quarantine, and tests of the efficacy and operation under practical conditions of the treatments. The aim of such treatments is to produce eligibility for certification of the products in the simplest manner and at a minimum of cost to the Federal Government and the shipper.

During the past three years, this work has resulted in steady progress. Specific accomplishments are the development of fumigation using methyl bromide, the expansion of the schedules of treatments to include different temperatures and conditions, the determination of the safety factor in the fumigation of many products, and the development of plans for approved, inexpensive, safe and well constructed fumigation chambers.

(d) SWEETPOTATO WEEVIL CONTROL

Appropriation Act, 1942, plus $825 supplemental for within-grade promotions	$70,825
Budget estimate, 1943	71,585
Change from 1942:	
Additional for administrative promotions	+ 760

PROJECT STATEMENT

Project	1941	1942 (estimated)	1943 (estimated)	increase
1. Sweetpotato weevil control.	$68,712	$70,000	$70,000	
2. Net cost of within-grade promotions	- -	825	1,585	+ 760
Unobligated balance	1,288	- -	- -	- -
Total appropriation	70,000	70,825	71,585	+ 760

WORK UNDER THIS APPROPRIATION

Objective: To cooperate with State agencies in the eradication of the sweetpotato weevil from commercial sweetpotato plantings in areas where such eradication of the insect is practicable, and the protection of areas in which eradication has been accomplished by the enforcement of the regulatory measures provided in the standard state quarantines promulgated on account of this pest.

The problem and its significance: In 1939, sweetpotatoes produced in the United States had a farm value of nearly $55,000,000, and about one-half of these were grown in the States of Alabama, Georgia, Mississippi, and Texas. In these states the outstanding sweetpotato pest is the sweetpotato weevil. The control and eradication of this pest is therefore of major importance in this area, in order that sweetpotatoes may continue to be produced profitably.

General plan: Activities designed to accomplish control and eradication of the weevil include (1) inspection to locate and determine the status of the weevil in commercial sweetpotato-producing areas; (2) operations to eradicate the pest from infested plantings wherever such measures are applicable; (3) the destruction of infested seed beds and storage banks; (4) cleaning up of fields after harvest; (5) eradication of wild host plants, where practicable; and (6) cooperation with states in the enforcement of regulatory measures. Cooperating states are donating $45,000 to this program during the fiscal year 1942.

Examples of progress and current program: Since intensive eradication work was begun in cooperation with the affected states in July 1937, 1,441 properties have been found infested in 30 counties of these 4 states, where eradication work was found to be practicable. In 1941, only 184 properties in this area were found infested out of a total of nearly 25,000 properties inspected, showing a reduction of nearly 88 percent in infested properties. Inasmuch as eradication of the sweetpotato weevil cannot be accomplished by farmers working individually because of the spread from one farm to another and over long distances by shipments of sweetpotatoes and propagating plants, it is necessary that a coordinated effort be made by government agencies. The eradication of local infestations in commercial-producing areas is of utmost importance if the sweetpotato industry is to persist.

It is planned to continue intensive reinspection of areas in which eradication has been accomplished to discover any possible reinfestations and to continue the inspection and eradication efforts in those counties in which the insect has apparently not been completely eradicated. In addition, cooperation with the states will be continued in the enforcement of state quarantines to prevent the movement of material from infested areas which might carry the insect to non-infested areas.

(e) MEXICAN FRUIT FLY CONTROL

Appropriation Act, 1942, plus $1,695 supplemental for within-grade promotions	$169,655
Budget estimate, 1943	163,740
Change from 1942:	
Net reduction in working funds	- 7,960
Additional for administrative promotions	+ 2,045
Net decrease	- 5,915

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Mexican fruit fly control operations:				
(a) Grove and packing-house inspection and certification for Mexican fruit fly control	$132,588	$132,660	$124,700	-$7,960 (1)
(b) Spraying and control of Mexican fruit fly in Texas	21,258	21,800	21,800	- -
(c) Spraying and control of Mexican fruit fly in Mexico	4,227	5,000	5,000	- -
(d) Vehicular inspection for Mexican fruit fly control	6,190	8,500	8,500	- -
2. Net cost of within-grade promotions	- -	1,695	3,740	+ 2,045
Unobligated balance	3,697	- -	- -	- -
Total appropriation	167,960	169,655	163,740	- 5,915

DECREASE

(1) The decrease in working funds of $7,960 in this item contemplates a curtailment in grove and packing house inspection and certification, particularly those phases of inspection which determine the extent of infestation at the completion of the harvesting season.

WORK UNDER THIS APPROPRIATION

Objective: To prevent the spread of Mexican fruitfly from those parts of Texas along the Mexican border where it occurs and cooperate with appropriate official agencies to control existing infestations, thus protecting uninfested fruit producing regions from this important pest of many kinds of fruits.

The problem and its significance: The Mexican fruitfly is an insect that seriously damages citrus, deciduous and certain tropical fruits in Mexico, where it probably originated. This pest was discovered in Texas in 1927, and infestations of varying degrees of intensity have been found almost every year since that date. During some seasons it has caused important loss to citrus fruit in the Lower Rio Grande Valley of Texas. Within the past few years citrus production within this area has reached a total of between forty-five and fifty thousand carloads annually, and the presence of this pest is an important economic factor. The problem is to protect as far as possible the quality and marketability of this crop, and through the enforcement of Federal Quarantine No. 64, to prevent the spread of this serious fruit pest from the regulated area in Texas to other fruit growing regions of the United States.

General plan: The general work plan is (1) by periodic grove and field inspections, to determine the presence or absence of the Mexican fruitfly; (2) by inspection of citrus packing and processing plants to insure that fruit being packed, processed, or shipped will be moved in accordance with quarantine regulations; (3) to maintain a host-free period during the summer months so that no ripe fruits are in the area, preventing oviposition and resultant increase in the fly population; (4) to route fruit from infested groves through sterilization rooms so that any living larvae in the fruit will be destroyed; (5) to inspect markets and groves in Mexico adjacent to the regulated area in Texas with the object of holding down infestations which could easily spread to Texas groves; (6) to control the movement of citrus fruit by motor vehicles through operation of road traffic inspection stations at strategic points.

The work is organized under four work projects: (1) Grove and Packing House Inspection and Certification; (2) Spraying and Control in Texas; (3) Spraying and Control in Mexico; and (4) Vehicular Inspection.

Examples of progress and current program: During the 1940-41 shipping season for citrus fruits, no serious outbreaks of the fruit fly occurred in the regulated area. This made it possible to extend the harvesting season to May 31, one month beyond the usual closing date, and facilitate orderly harvesting, which had been considerably retarded by adverse weather conditions. The larval infestations discovered were 522 and 979 flies were trapped, only about 1/6 as many as those trapped during the previous season.

The vapor heat method of sterilization authorized under the quarantine regulations continued to be used extensively, nearly 10,000 tons of grapefruit being treated by this method. This amounted to 662 car loads and was somewhat in excess of the amount of fruit treated by vapor heat during the previous season. There is a marked decrease in treatment by low temperature methods.

Two new road stations were opened during the 1940-41 season, making a total of 5 such stations. More than 22,000 trucks were inspected at these stations during the shipping season. The amount of fruit passing through them was equivalent to nearly 30,000 car lots. In connection with the operation of these stations it was possible to extend cooperation to the Board of Control of the Treasury Department in carrying out certain phases of its work.

The project also loaned motor equipment to the Engineers of the U. S. Army during the periods when it was not actively needed in connection with work of the Mexican fruitfly control.

(f) CITRUS CANKER ERADICATION

Appropriation Act, 1942, plus $100 supplemental for within-grade promotions	$13,585
Budget estimate, 1943	10,160
Change from 1942:	
Net reduction in working funds	- 3,485
Additional for administrative promotions	+ 60
Net decrease	- 3,425

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Citrus canker eradication ...	$13,385	$13,485	$10,000	-$3,485 (1)
2. Net cost of within-grade promotions	- -	100	160	+ 60
Unobligated balance	100	- -	- -	- -
Total appropriation	13,485	13,585	10,160	- 3,425

DECREASE

(1) The reduction in working funds of $3,485 in this item for 1943 contemplates discontinance of activities in Louisiana and a curtailment of activities in previously infected and contiguous properties in Texas.

WORK UNDER THIS APPROPRIATION

Objective: To cooperate with responsible State agencies in locating and eradicating any remaining infections of citrus canker which may occur within the United States, thus eliminating an important introduced disease and protecting the citrus industry from excessive losses it may cause as has been demonstrated in areas from which it has been eradicated.

The problem and its significance: Citrus canker is a destructive, introduced, bacterial disease which attacks all parts of the tree, including fruit which it makes unmarketable. The disease is highly infectious and can easily be spread from tree to tree by many ways, including the use of tools, movement of domestic animals, birds, et cetera. It may be spread long distances by movement of infected parts of the citrus trees, including fruit and through shipments of nursery stock.

The disease known as citrus canker was first found in the United States at Port Arthur, Texas, area in 1911. It spread rapidly eastward reaching several counties in Florida in 1914 and causing important losses in certain commercial producing areas. Extensive activities carried on in cooperation with Federal and State agencies involving the expenditure of approximately $5,000,000 resulted in eradicating the disease from Alabama, Georgia, Florida, Mississippi, and South Carolina, and all other commercial citrus producing areas. In this work several hundred thousand orchard and nursery trees were destroyed and the participating States made large contributions to the work. The disease is believed to still persist in noncommercial sections in limited parts of Louisiana and Texas. The present problem consists of locating and eradicating any infections that may exist to complete the task of eliminating this important introduced disease from the United States.

Production of citrus fruit is an important industry with an annual average farm value in excess of $100,000,000. Its protection from the ravages of this destructive disease is essential to the welfare of the industry which furnishes a food product necessary to the general health and well-being.

General plan: (1) To reinspect commercial citrus producing areas in Louisiana and Texas for incipient infections and recurrences of the disease; (2) to inspect citrus growing nurseries for the prevention of possible dissemination of diseased nursery stock; (3) to complete intensive reinspection of all escaped and planted host trees of the disease in noncommercial citrus areas in Louisiana and Texas where infections occurred recently; and (4) to destroy all infected trees and all abandoned and escaped host trees in their vicinity and in the environs of previous infections. The States of Texas and Louisiana are contributing $18,000 to this cooperative program during the fiscal year 1942.

Examples of progress and current program: To give added needed assurance that the disease does not reappear in Florida, annual inspections are made, independently, throughout the citrus area in that State by the responsible State agency.

Since 1935 the destruction of several million wild and abandoned host plants of no commercial importance, growing on infected properties and in their vicinities, have been destroyed by cooperation with property owners and under State authority by relief labor employed under funds allotted for emergency relief. This accomplishment has resulted in elimination of a reservoir which might harbor infection and from which it might spread.

Recent intensive inspections clearly indicate that the citrus canker disease persists in limited noncommercial citrus producing areas in Louisiana and Texas. That the disease is being eliminated from such areas is indicated by the fact that only three infected properties were located in 1939 and 1940, whereas infection was found in 97 properties during the previous four years. Unless all remaining infections are located and eradicated they will be centers from which the disease will spread to valuable commercial plantings in these and other citrus producing States.

SUPPLEMENTAL FUNDS

Direct allotment

Project	Allotments, 1941	Estimated allotments, 1942
Emergency Relief Appropriation:		
Citrus canker eradication	$75,000	$22,000

(g) GYPSY AND BROWN-TAIL MOTH CONTROL

Appropriation Act, 1942, plus $3,410 supplemental for within-grade promotions	$378,410
Budget estimate, 1943	457,570
Change from 1942:	
Increase in working funds	+ 75,000
Additional for administrative promotions	+ 4,160
Net increase	+ 79,160

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase
1. Inspection and certification for gypsy and brown-tail moth control	$97,467	$99,282	$99,282	- -
2. Control operations for gypsy and brown-tail moth control ..	272,796	275,718	350,718	+ $75,000 (1)
3. Net cost of within-grade promotions	- -	3,410	7,570	+ 4,160
Unobligated balance	4,737	- -	- -	- -
Total appropriation	375,000	378,410	457,570	+ 79,160

INCREASE

(1) An increase of $75,000 in this item for 1943 is requested for the project "Control operations for gypsy and brown-tail moths" for additional costs of operating W.P.A. projects on a State rather than Federal basis.

Objective: To provide for supervisory operations and replacement of equipment necessary in connection with the operations of W.P.A. projects on a State program basis, due to the elimination as of January 1, 1942 of funds for Federal agency W.P.A. projects.

The problem and its significance: From 1935 to January 1, 1942 allotments from W.P.A. funds for Federal agency projects were available to supplement this program. These funds terminated January 1, 1942, and changing over from a Federal agency project basis to a group of projects in the various State W.P.A. programs will eliminate administrative and non-labor funds for the employment of supervisors and inspectors, and the replacement of worn-out equipment.

In carrying out operations to locate and eradicate infestations of the gypsy moth in the Barrier Zone and to suppress the infestation in Pennsylvania it is necessary to (1) use considerable quantities of materials, (2) maintain and operate equipment needed to do the work, and (3) closely supervise all operations concerned with control work including the inspections to locate egg clusters.

Financial requirements: The following tabulations itemize these estimated expenditures for (a) Work in the Barrier Zone and (b) Work in Pennsylvania:

(a) Operating expenses in Barrier Zone

Supervisory expenses	$10,000	
Supplies and Materials	14,000	
Communications	500	
Equipment	25,500	$50,000

(b) Operating expenses in Pennsylvania

Supervisory expenses	5,000	
Supplies and materials	7,000	
Communications	250	
Equipment	12,750	25,000

Total increase 75,000

WORK UNDER THIS APPROPRIATION

Objective: To prevent the spread of the Gypsy and Brown-tail moths by artificial means by safeguarding the movement of articles which may carry these pests into uninfested areas; and to suppress the gypsy moth at the margin of the generally infested area and in outlying sections to prevent its spread into new sections by natural means.

The problem and its significance: The Gypsy moth and Brown-tail moth are important introduced pests which have become established in the New England area. Both are vigorous defoliators feeding upon a wide variety of trees and causing great damage. The problem is, through the use of active control measures and quarantine, to keep the insects within the general area in which they occur and to prevent spread to uninfested areas, and at the same time to make intensive efforts to reduce populations in the area of general infestation, particularly in regions adjacent to uninfested areas. Important interests are affected by this problem because (1) the commercial and aesthetic value of the trees to be protected is very large, and (2) articles affected by the quarantine include nursery stock, stone and quarry products, and forest products, including Christmas trees and greenery. Inadequate control and inspection measures would endanger the values in the former group, and would almost certainly result in state embargoes on the part of states now free from these pests.

General plan: Inspection and certification service is maintained from strategic points throughout the States of Rhode Island, Maine, New Hampshire, and parts of Vermont, Massachusetts and Connecticut, which comprise the regulated area. A barrier zone is maintained at the western edge of the generally infested area in which intensive scouting and control work is carried on in order to locate and destroy incipient infestations and minimize the chance of a spread to the uninfested areas to the west, and to eradicate incipient infestations which may have become established in uninfested areas. This work has been carried on under both regular appropriations and allotments under W.P.A. funds, and active cooperation has been received from state, county, and municipal agencies which are contributing during the fiscal year 1942 a total of more than $1,100,000.

Examples of progress and current program: The work under this appropriation is conducted under two separate financial projects--(1) Inspection and certification for gypsy and brown-tail moth control, and (2) control operations for gypsy and brown-tail moths.

The situation under these projects is outlined as follows:

Inspection and certification for gypsy and brown-tail moth control: There has been no important change in the area under regulation for the past three years, although there has been an appreciable increase in the requests for inspection and certification service. The following trends have been noted: (1) Increased local infestations in and near many large nurseries are placing an increased burden on the inspection facilities of the Bureau. (2) The need for lumber in connection with various phases of the National Defense Program is requiring more numerous inspections of such material which it is proposed to ship from the regulated area. Much of the lumber is cut from logs placed in water storage following the New England hurricane of 1938. Many of these storage sites are in locations subject to moth infestations. (3) Increased moth infestation in Christmas tree results in requiring additional inspections. Since 1938 there has been in general a steady

increase in all types of material subject to inspection and certification. For example, 12,943,623 pieces of nursery stock were inspected during 1940, as against 9,193,979 in 1938. Lumber inspected increased during the same period from 34,997,628 board feet to more than 89,000,000 board feet.

Control operations for gypsy and brown-tail moths: Current efforts are directed to two major activities, namely, intensive control measures in the case of the most dangerous and threatening infestations in the barrier zone, and the eradication of the serious gypsy moth infestation in Pennsylvania. During the fiscal year 1941 a total of 59 infestations were exterminated in the barrier zone and 44 in the Pennsylvania area. Allotments from W.P.A. funds have played an important part in the work, which has been largely successful despite serious handicaps, such as the heavy turn-over of W.P.A. personnel and some difficulty in securing qualified labor.

SUPPLEMENTAL FUNDS

Direct Allotment

Project	Allotments 1941	Estimated allotments, 1942
Emergency Relief Appropriations: Control and prevention of spread of gypsy moth	$762,000	$329,000

(h) DUTCH ELM DISEASE ERADICATION

Appropriation Act, 1942, plus $3,345 supplemental for within-grade promotions	$353,345
Budget estimate, 1943	456,475
Change from 1942:	
Increase in working funds	+100,000
Additional for administrative promotions	+ 3,130
Total increase	+103,130

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase
1. Dutch elm disease eradication:				
(a) Scouting to locate the Dutch elm disease ...	$314,794	$260,000	$305,000	+$45,000 (1)
(b) Identification of disease in trees suspected to be infected with the Dutch elm disease	33,065	25,000	25,000	- -
(c) Enforcement of quarantine on Dutch elm disease	4,567	10,000	10,000	- -
(d) Coordination of State work on the Dutch elm disease	19,148	25,000	40,000	+ 15,000 (1)
(e) Removal of diseased, dead and dying trees	5,079	10,000	50,000	+ 40,000 (1)
(f) Investigations and surveys on virus disease of elms prevalent in the Ohio Valley	18,782	20,000	20,000	- -
2. Net cost of within-grade promotions	- -	3,345	6,475	+ 3,130
Unobligated balance	4,565	- -	- -	- -
Total appropriation	400,000	353,345	456,475	+103,130

INCREASE

(1) The increase in working funds of $100,000 in this item for 1943 is to provide for additional supervisory expenses and the repairing and replacement of equipment, arising out of operating W.P.A. projects on a State rather than Federal basis.

Objective: This increase is necessary in connection with the operation of W.P.A. projects on a State basis rather than as Federal Agency projects, due to the elimination as of January 1, 1942 of funds for Federal Agency W.P.A. projects.

The problem and its significance: This objective of this program has been approached through the joint and coordinated use of the regular Dederal appropriation made and considerably larger allocations of Federal Agency W.P.A. funds. From 1935 to January 1, 1942 allotments from W.P.A. funds for Federal Agency projects were available to supplement this program; after that date, Federal Agency W.P.A. projects will not be available and separate or individual Federally Sponsored State projects will have to be sought and operated. It is expected that project direction, planning, supervision and coordination of work between the various States will be increased and complicated under this procedure, requiring more qualified and selected supervisory personnel not readily obtainable and coincidentally more travel between the States involved.

The major region where the Dutch elm disease is now known to occur embraces an area of approximately 10,900 square miles and added to this are five isolated points of infection. The work against the disease consists of locating suspected trees, identifying the causal organism of the disease if present, removing and destroying the infected trees (or rendering them harmless) on the permission of the owner or through the exercise of State Plant Pest Laws, likewise searching for and destroying material infested or likely to be infested by the bark beetles that transmit the infection, and endeavoring to prevent spread of the disease through quarantine.

Furthermore, in order to provide adequate and safe transportation of the supervisory personnel to and between the various work locations, security wage worker assembly points and the various field headquarters, considerable overhaul and repair of existing Federally-owned equipment will be required. Likewise an increased amount of expenses for travel will be incurred and some tools and field equipment will be necessary.

These requirements in supervision, travel expenses, overhauls, tools and equipment using State W.P.A. project funds cannot be met adequately without this increase.

Plan of work: The additional supervisory force and equipment will be prorated among the States involved - i.e., Connecticut, New York, New Jersey, Pennsylvania, Maryland, West Virginia, Ohio, Indiana and any other States where the disease may be found, on the basis of need from the standpoint of the problem and the development of adequate State projects justifying the assignments. It is expected that the same procedures as have been used for combating the disease will be employed but advantage will be taken of results of research and developmental work as they become available and can be fitted into the program.

Due to the nature of the Dutch elm disease problem, new locations and changes in area of the disease and discoveries in information and work methods cannot be anticipated before they occur. Similarly it is impossible to predict at this time the amounts of W.P.A. funds that will be

approved and set up in State Projects nor the number or caliber of the security wage workers that can be made available in each of the various States and places where work should be conducted. These difficulties, however, indicate the need for the increased supervision, expenses and travel requested.

Financial requirements:

Personnel (field)			Other obligations	
Permanent:			Travel expense	$6,840
2 Supervisors	at $2600	$5,200	Gasoline and oil	8,000
26 "	at $2000	52,000	Tools and equipment	4,000
4 "	at $1620	6,480	Repair and overhauls	17,480
		$63,680		$36,320

Total increase.....$100,000

WORK UNDER THIS APPROPRIATION

Objective: To suppress, and where practicable eradicate, and prevent the spread of an important introduced fungous disease of elm known as Dutch elm disease and to carry on operations on an important virus disease of elm prevalent in the Ohio Valley thus protecting elms in uninfected sections and in areas where infection occurs.

The problem and its significance: The Dutch elm disease is caused by a fungus, which frequently kills trees it invades, that, in the light of present knowledge, is transmitted from elm to elm exclusively on certain beetles. From the discovery of the disease in this country in 1930, through October 31, 1941, 64,081 elms affected by the disease have been located.

The American Elm is generally accepted as this country's most valuable shade tree. It has been estimated that there are over 25 million elm shade trees in the United States, with a value exceeding $660,000,000, while there is an additional timber and cordwood value represented in forest growth.

The States now known to have or have had diseased trees are: Massachusetts, (found for the first time within the past year), Connecticut, New York, New Jersey, Pennsylvania, Maryland, Virginia, West Virginia, Ohio and Indiana, while at least 13 other States either have been exposed to the disease through the movement of infected material or are threatened by spread from established areas. The elm virus disease prevalent in the Ohio Valley has killed many trees. It is known to be destructive in only certain localities, but also occurs over a wider area. Effective methods for its control are not now known.

General plan: The work on the Dutch elm disease consists of: (1) scouting to find the infected trees and the carrier beetles; (2) identifying the disease organism; (3) destroying the infected and the infested material; and (4) endeavoring to prevent the transportation of diseased material from infected to noninfected sections of the country; and is conducted in cooperation with

the States having diseased trees, which support the effort by varying amounts. Both appropriations to the Department and W.P.A. funds have been used in the prosecution of the work but the work has largely been financed from W.P.A. funds.

Cooperating states are contributing more than $155,000 to this program during the fiscal year 1942.

Examples of progress and current program: Since it is impossible to discuss the current situation without taking into account the operations carried on under W.P.A. funds, the program will be presented as a whole rather than under separate work project headings.

At the beginning of the fiscal year 1941, the major region where the infection was known to occur, a section about New York City, in Connecticut, New York, New Jersey and Pennsylvania, consisted of approximately 8,800 square miles. This region was entirely scouted as thoroughly as funds and available personnel would permit. A border zone of approximately 8,700 square miles about this infected region was similarly scouted and a large territory beyond this border zone, roughly 50 miles deep, was very lightly and rapidly scouted. Isolated centers where the disease was known to have occurred recently, as Indianapolis, Ind., Athens, Ohio, Cumberland, Md., Wiley Ford, W. Va., Wilkes-Barre, Pa., Susquehanna County, Pa., and Binghamton, N. Y., were scouted rather intensively. Certain other areas where diseased trees had been found in the past or where it was felt the disease might occur were less intensively scouted. Specimens from 48,187 suspected trees were sent in and cultured, about two-thirds the number for the previous year, and a total of 4,803 of these trees was found to have the infection, about half the number found diseased the previous fiscal year.

Finding the Dutch elm disease in new localities about the known major region for the first time during the fiscal year 1941 and the early part of 1942, increased the major region by about 1928 square miles, to approximately 12,565 square miles.

The 8 months from October 1940 through May 1941, were devoted largely to sanitation work aimed at reducing the population of the beetle carriers of the disease. Some scouting for the disease was carried on while the scouting for beetle material was conducted during this period, just as insect-infested material was located in the summer along with suspect scouting.

During the fiscal year 1941, 171,302 trees or items were eradicated, including diseased trees. 52,738 items that were beetle infested or likely to become so were removed from standing trees and destroyed. These figures represent only about 56 percent of the total trees removed and pruned of beetle material during the preceding year but such a mere quantitative comparison does not present a picture of the results because the material was selected more closely for actual infestation this year.

The present program (summer 1941) is designed to scout for diseased trees and elms infested by the carrier beetles in selected portions of the major region where the infection is known to occur; to scout more intensively to determine spread in a border zone around this region; likewise to scout more intensively the isolated infection points and a border zone around them; as well as to scout other localities suspected of having the disease. In the major region and in the isolated areas and the border zones surrounding them, the infected and infested material found is being removed and destroyed during the winter 1941-42. An effort is being made this year (fiscal 1942) to save certain lightly diseased trees by removing the dangerous material from them. Advantage will be taken of research information as developed in shaping and altering the program.

SUPPLEMENTAL FUNDS

Direct Allotment

Project	Allotments 1941	Estimated allotments, 1942
Emergency Relief Appropriations: Eradication of Dutch elm disease	$1,668,874	$841,000

(i) PHONY-PEACH AND PEACH MOSAIC ERADICATION

Appropriation Act, 1942, plus $1,070 supplemental for within-grade promotions	$90,870
Budget estimate, 1943	127,390
Change from 1942:	
Net increase in working funds	+35,200
Additional for administrative promotions	+ 1,320
Net increase	+36,520

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase
1. Eradication of phony-peach and peach mosaic	$89,653	$89,800	$125,000	+$35,200 (1)
2. Net cost of within-grade promotions	- -	1,070	2,390	+1,320
Unobligated balance	147	- -	- -	- -
Total appropriation	89,800	90,870	127,390	+ 36,520

INCREASE

(1) An increase in working funds of $35,200 is requested to provide for supervisory expenses and replacement of equipment necessary in connection with the operation of W.P.A. projects on the state rather than Federal agency basis.

Objective: The objective of the increase is to provide for supervisory expenses and replacement of equipment incident to change of W.P.A. projects from a Federal agency to a State Project basis.

The problem and its significance: From 1935 to January 1, 1942, allotments of W.P.A. funds for Federal agency projects were available to supplement regular Federal appropriations and state funds available for prosecuting the project. Changing over from a Federal agency project to a group of projects in the various state W.P.A. programs will eliminate administrative and non-labor funds for employment of supervisors and inspectors, and for the replacement of worn out equipment. A very important part of the work needed to be done to combat these important diseases is the inspections to locate the diseased trees and this also has an important bearing on the amount of labor to be used. This requires a considerable amount of travel which is not provided under state project system. To conduct the work near its present level of efficiency, and make the most effective use of relief labor will require the additional funds requested herein to replace the items eliminated by the change in the W.P.A. setup.

The Phony-peach and peach mosaic diseases are virulent virus diseases occurring throughout the southern half of the United States, the former in the southeast and the latter in the southwest, with a common meeting ground in Texas. These diseases are apparently spread from tree to tree and from orchard to orchard by insects and over long distances by shipments of nursery stock. Fruit from trees of advanced infection is of no market value. The only known method of control is to annually inspect orchards, dooryard plantings, and nurseries, and to destroy diseased trees promptly on discovery. Prior to undertaking this work, peach growers throughout heavily infected areas were gravely concerned over the future of their industry. Recent years have demonstrated the success of the cooperative Federal-state control program and growers feel secure in their knowledge that under such a program economic peach production is possible. To control these diseases it is necessary to inspect annually nearly 1,000 nurseries, growing 20,000,000 peach trees, as well as 15,000,000 to 20,000,000 orchard trees, and to remove diseased trees to the extent of 100,000 or more. It is also necessary to eliminate hundreds of thousands of escaped and abandoned trees to prevent their becoming a harboring place for these diseases. To accomplish these needs requires a large staff of supervisors, inspectors, and clerks, as well as automotive equipment and tools.

Plan of work: It is planned to restore to the 1935-41 average level, the numbers of supervisors and inspectors permitted under the combined regular and Federal agency WPA funds, and to make necessary replacements of worn out equipment.

In general it is planned to cooperate with states to inspect nurseries and environs throughout the infected areas from coast to coast; to inspect orchards and dooryard plantings and arrange for removal of diseased trees; to arrange for the removal of escaped and abandoned peach trees with W.P.A. assistance in the form of state projects; and to cooperate with states in enforcement of their quarantines to prevent spread of the disease through shipments of infected nursery stock. All operations are to be conducted under authority legally vested in the state plant pest control offices. Orchards will be inspected tree by tree, diseased trees marked for subsequent digging, holes will be filled and brush burned.

Financial requirements: The work to be undertaken requires the employment of inspectors and supervisors trained technically in plant pathology. The increase of $35,200 will be applied as follows:

Personnel (field)		Other expenses	
2 P-2 Assistant Plant Pathologists - 1 year	$5,200	Supplies and Materials	$2,000
2 P-1 Junior Plant Pathologists - 1 year	4,000	Storage of automobiles	350
26 SP-5 Inspectors - 3 months each	11,700	Travel expenses	8,860
		Repairs to automobiles	1,240
		Equipment	1,850
	20,900		14,300

Total increase $35,200

WORK UNDER THIS APPROPRIATION

Objective: To cooperate with state and local agencies in suppressing and possibly eliminating phony-peach and peach mosaic, two important destructive virus diseases of peach; and to prevent the spread of these diseases into uninfected areas, including certification of restricted articles to meet the requirements of State quarantines.

The problem and its significance: Production of peaches is an important industry in 40 states, with an average annual farm value in excess of $50,000,000. These diseases dwarf trees, reduce production, and render fruit of little economic value. Nearly 100,000 orchard trees were found infected with these diseases in 1941. Their habit of natural spread from tree to tree, from orchard to orchard, and over long distances through the medium of nursery stock shipments places their control beyond the ability of individual growers.

General plan: In cooperation with states, to inspect host trees; to remove those found infected; to inspect nurseries and budwood sources and their environs, and certify those nurseries eligible to ship stock; to enforce state quarantines; and to remove escaped and abandoned host trees to prevent their becoming reservoirs for these diseases. The work is

supplemented by the use of labor made available from funds provided for emergency relief, the leadership, supervision, and direction of which is provided by funds supplied under this item and then all activities fitted into a unified program. During the fiscal year 1942, cooperating states are donating approximately $34,500 to phony-peach eradication and $30,700 to peach mosaic eradication.

Examples of progress and current program: Protection is being afforded the industry by this cooperative activity. A few years ago the very existance of the industry in heavily infected peach growing areas in such states as Georgia, Tennessee, Colorado, and California was threatened due to ravages of these diseases. Effective control activities have restored the industry to its rightful place as a major agricultural asset.

Eradication has apparently been accomplished in four states in which scattered infection occurred, and in 147 counties of 12 additional infected states.

Allotments of emergency relief funds since 1935 have resulted in the destruction of more than 100,000,000 escaped and abandoned peach trees, thereby eliminating such trees as a reservoir of the disease and a major hazard of spread to commercial orchards and peach growing nurseries.

Protection has been afforded to peach growing nurseries, thereby making all but a few thousand of the 20,000,000 peach trees available for interstate shipment in full compliance with uniform safe quarantine provisions. This accomplishment has resulted in holding the risk of long distance spread of the diseases to a minimum.

SUPPLEMENTAL FUNDS

Direct Allotments

Projects	Allotments, 1941	Estimated allotments, 1942
Emergency Relief Appropriations:		
Control of phony-peach disease ..	$163,520	$80,000
Control of peach mosaic disease .	154,480	58,297
Total	318,000	138,297

(j) FOREST INSECTS

Appropriation Act, 1942, plus $2,165 supplemental for within-grade promotions ..	$214,665
Budget estimate, 1943	205,180
Change from 1942:	
Net reduction in working funds	- 12,500
Additional for administrative promotions	+ 3,015
Net decrease	- 9,485

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Investigations on forest insects:				
(a) Bark beetles attacking forest and shade trees	$28,500	$28,500	$28,500	- -
(b) Insects which feed on foliage of forest and shade trees	25,500	25,500	24,000	-$1,500 (c)
(c) Insects which bore through the wood and bark of forest and shade trees ..	6,000	6,000	- -	- 6,000 (a)
(d) Sucking insects which attack forest and shade trees	7,000	7,000	7,000	- -
(e) Insects attacking forest trees in nurseries, plantations, and areas of natural reproduction	3,500	3,500	3,500	- -
(f) The relation of climatic factors, such as heat, cold, moisture, etc., on forest insect populations	9,000	9,000	9,000	- -
(g) Insecticides for the control of insects attacking forest and shade trees	5,400	5,400	5,400	- -
(h) Injection of chemicals into the sapstream of the tree for the control of bark beetle infestations and for the treatment of green trees to prevent insect attack upon the utilized wood	4,600	4,600	4,600	- -
(i) Insects affecting forest products	7,200	7,200	7,200	- -
(j) Habits and development of methods for control of termites	17,500	17,500	17,500	- -

PROJECT STATEMENT - Continued

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Investigations on forest insects - Continued:				
(k) Value and use of introduced and native parasitic and predacious enemies upon introduced and native forest insects	$4,800	$5,000	- -	-$5,000 (b)
(l) Surveys to locate and determine the status of insect pests of the forests and the giving of advice to land-managing agencies on planning and conducting necessary control work.....	46,800	47,000	$47,000	- -
(m) Relation of insects to the Dutch elm disease	20,500	20,500	20,500	- -
(n) Dissemination of information to the public on methods of controlling forest and shade tree insects, including general inquiries on this subject	25,013	25,800	25,800	- -
2. Net cost of within-grade promotions	- -	2,165	5,180	+ 3,015
Unobligated balance	1,187	- -	- -	- -
Total appropriation	212,500	214,665	205,180	- 9,485

DECREASES

The decrease in working funds of $12,500 in this item for 1943 consists of the following reductions:

(a) Decrease of $6,000 in the project for investigations on borers attacking forest and shade trees. This contemplates a curtailment of work at the Berkeley, California and Milwaukee, Wisconsin laboratories.

(b) Decrease of $5,000 in the project for the study of beneficial insects. This will result in curtailment of activities at the New Haven, Connecticut laboratory.

(c) Decrease of $1,500 in the project on defoliators affecting forest trees made possible because of decrease in the activities of the European spruce sawfly. This curtailment likewise will be at the New Haven, Connecticut laboratory.

WORK UNDER THIS APPROPRIATION

Objective: To devise the most effective and economical methods of preventing or controlling insect damage to forest trees and forest products, especially those that are of critical importance in the national defense program; to make surveys to determine the status of insect infestations and ascertain where control programs are needed; to advise forest-managing and wood-using agencies on control methods and aid them with technical advice and supervision.

The problem and its significance: Insects affecting forests and forest products are estimated to cause losses in excess of $100,000,000 annually. This destruction is of particular importance at present because of the greatly increased demands for lumber and other forest products used in defense activities. Our reserve supply of standing timber and the tremendous quantities cut for lumber and other purposes must be protected from insect attack.

Losses caused by forest insects are much smaller than they would be if it were not for the assistance given to forest-managing agencies and wood-using industries. Defense activities, particularly in housing, are resulting in many new problems as well as accentuating several of those already under study and for which reasonably effective preventive or control measures have been developed.

General plan: The work is organized on a regional basis with 10 field laboratories each of which gives attention to the most important research and service problems of its surrounding area. Emphasis is placed upon active cooperation with other federal, state and private agencies. Studies that will not result in information of immediate practical application are being curtailed for the present. The funds and personnel so released are being devoted to problems that affect the supply of commercial timber needed and being used in defense activities. This has resulted in active cooperation with many other federal agencies such as the War and Navy Departments, several branches of the Federal Works Agency, the Federal Housing Administration, and the Farm Security Administration.

Examples of progress and current program: The following examples of recent accomplishments under this appropriation are cited by work projects to show progress, and also to indicate the next steps in a logical development of the program:

Termite investigations: The work on the termite project has been greatly increased during the past year as a result of the rapidly expanding building activities by various government agencies, particularly those concerned with defense housing. Most of these agencies were unfamiliar with the termite problem and with measures to be taken for preventing termite infestation in wooden structures. Those agencies that did recognize the need for protection were found to be using measures that were unnecessarily expensive and that in many cases were ineffective. Assistance has been given to these agencies by reviewing construction plans and by visiting many of the projects under construction and making specific recommendations for changes that will result in better protection against termite infestation.

The cost of this work has been only a small fraction of the money that might otherwise have been spent in unnecessary or ineffective preventive measures. Savings of up to $50,000 on single projects have been made and the total will exceed a million in this fiscal year. Also the studies have resulted in structural modifications making the use of metal termite shields unnecessary and thus saving large quantities of zinc and copper.

Where the Bureau's recommendations have been followed there is little likelihood of serious infestations developing in the future. The housing program being conducted by the government is, however, so extensive that it has been impossible to give as much assistance as was actually needed. Legislative limitations placed on the cost of individual housing units have made it impossible for the agencies to follow all the recommendations made by this Bureau and it therefore appears inevitable that many of the projects will be subject to a great amount of termite infestation and damage in future years. It is expected that there will be many requests for assistance in making examinations of buildings to detect the presence of termites and for advice as to the most effective control procedures.

Bark beetle investigations and surveys: Federal and private timberland owners in northeastern California and southeastern Oregon are manifesting increasing interest in sanitation-salvage logging of susceptible trees as a method of controlling the western pine beetle in mature ponderosa pine. This method has been developed as a result of research work conducted over a period of years in northeastern California and gives promise of being one of the most important developments of recent years in the protection of these forests and of permitting the fuller utilization of the available supply of mature ponderosa pine that is sorely needed in the national defense program.

The present greatly expanded market for lumber should make it possible to extend this method of logging over a considerable part of the accessible ponderosa pine forest area. This will make possible the harvesting of a large volume of high quality timber and at the same time place the remaining stands in a much safer position with respect to future bark beetle losses. Such a program will, however, require considerable assistance on the part of our experts in instructing on the selecting of the trees that are susceptible to bark beetles and that should be cut.

Insistent demands are being made for similar studies in other parts of the ponderosa pine region and also in the white pine region of the Inland Empire. Additional research will be necessary to serve as a basis for applying these principles in these areas and to other species of trees.

Extensive surveys to determine the current status of bark beetle infestations must be conducted annually throughout the western states. Between 15 and 20 million acres of forest land have been covered annually by such surveys in recent years. These surveys serve as a basis for

recommending and conducting control programs in the areas that are most in need of such treatment. Lack of adequate funds has made it impossible to conduct surveys or apply control measures in many of the areas where serious losses have occurred. The rapid depletion of the remaining mature stands of pine during the present defense emergency has made losses by bark beetles even more important than usual. Every effort will therefore be made to concentrate on survey work during the coming year.

Forest products insect investigations: Past experience has shown that the concentration of large supplies of certain types of wood products in storage depots is almost certain to be followed by severe insect infestations. This is particularly true of hardwood products, such as tool handle stock, gun stocks, wooden wheels and flooring. Previous research work has resulted in the development of control measures that are reasonably effective if followed in the handling and storage of such products. The Bureau has made this information available to other agencies by issuing a new circular on the subject and will give assistance in individual cases as the needs arise. It is expected that the demands for such services will increase rapidly within the next year or two.

Limitation of discussion to these three projects does not mean a lack of progress on others. They are, however, the most significant in the light of present conditions, particularly in relation to defense.

(k) TRUCK CROP AND GARDEN INSECTS

Appropriation Act, 1942, plus $3,045 supplemental for within-grade promotions ...	$369,625
Budget estimate, 1943	337,020
Change from 1942:	
Net reduction in working funds	- 36,580
Additional for administrative promotions ...	+ 3,975
Net decrease	- 32,605

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Truck crop insect investigations	$169,738	$171,163	$171,163	- -
2. Berry insect investigations	5,640	5,877	- -	-$5,877 (1)
3. Sugar beet leafhopper invest. ..	72,975	73,390	73,390	- -
4. Tobacco insect investigations ..	72,565	73,150	42,447	-30,703 (2)
5. Insects affecting greenhouses and ornamental plants	42,813	43,000	43,000	
6. Net cost of within-grade promotions	- -	3,045	7,020	+ 3,975
Unobligated balance	2,849	- -	- -	- -
Total appropriation	366,580	369,625	337,020	-32,605

DECREASES

The decrease in working funds of $36,580 in this item for 1943 consists of:

(1) A decrease of $5,877 in the project "Berry insect investigations". This will eliminate this project and will involve the closing of the Puyallup, Washington laboratory which has been conducted in cooperation with the Washington State Experiment Stations.

(2) A decrease of $30,703 in the project "Tobacco insect investigations". This will involve the discontinuance of work on insects attacking field-grown tobacco in the dark-fire cured area and insects attacking shade-grown tobacco, with the closing of laboratories at Clarksvills, Tennessee, Quincy, Florida, and Windsor, Connecticut. It will also involve curtailment of work carried on at Richmond, Virginia on insects attacking tobacco in storage.

WORK UNDER THIS APPROPRIATION

Objective: To increase returns to growers of vegetables, berries, sugar beets, tobacco and greenhouse and ornamental plants by devising safe, simple, and practical methods, at a minimum cost, for controlling the insects and related pests which attack these crops in the field or in storage.

The problem and its significance: Vegetables, berries, sugar beets, tobacco, and the various crops grown in the greenhouse and by industries producing ornamental plants, comprise a very important part of agriculture in the United States, reaching a total estimated farm value slightly exceeding two and one-half billions of dollars in 1939.

The continued successful production of vegetables, berries, and sugar beets, and a possible extension in acreage of these food crops, constitutes an important phase of defense activities not only in the production of these nutritious and vitamin-containing commodities for consumption in the United States but for shipment in large quantities abroad. This contemplated expansion in production necessitates modifications and improvements in existing entomological control practices and includes (1) the development of more effective and cheaper insecticides of domestic origin to supplant those of foreign origin the supply of which may be cut off because of war conditions; (2) the prevention of losses in quantity and quality of crops due to insect damage; (3) the safeguarding of the health of the consumer through the elimination of the presence of harmful residues on edible products, and (4) the profitable production of crops where climatic and agronomic conditions are suitable but where insect depredations are major limiting factors.

General plan: The work consists principally of field and laboratory experiments and large-scale demonstrations in the field, in cooperation with State Agricultural Experiment Stations, State Departments of Agriculture, other Bureaus of this Department, farmers, various industries, and similar groups. Work is in progress utilizing 77 full-time employees located in 18 states, of which 4 states are located in the Pacific Northwest, 2 states in the Southwest, 3 states in the Middle West, 6 states in the South, and 3 states in the Northeast.

The work is organized under five financial projects covering investigations on insects and related pests attacking (a) truck crops, (b) berries, (c) sugar beets, (d) tobacco, and (e) greenhouse and ornamental plants.

Examples of progress and current program: The following examples of recent accomplishments under this appropriation are cited by Financial Projects in order to show progress on one or more aspects of the broader problems encountered. Other or additional aspects of these problems are cited as indicating the next logical steps to be taken in the research program.

Truck crop insect investigations: In the late 1920's and early 1930's the problem of insecticidal residues on leafy vegetables became acute because of the injudicious use by some growers of arsenicals in their attempts to control outbreaks of insect pests on such crops as cabbage, lettuce, celery, and beans. Experience had shown that insecticidal residues could not be adequately removed from these vegetable products by washing. Experiments conducted in the South, Southeast, Southwest, and in California have led to the development of insecticides and treatment schedules for these crops which will insure the grower adequate protection from insect losses and that his product be free from objectionable spray deposits. These organic materials, however, are more expensive and

unstable and require a greater number of applications to bring about the same results as the arsenicals. Consequently, attention is being directed to the reduction of treatment costs by improvement of methods of application and the improvement of these materials by the incorporation of small quantities of activating and wetting agents and by the development of new materials.

Aside from the spray deposit problem, the canner, processor, and grower of peas, tomatoes, and beans has been confronted with the problem of food contamination by weevil grubs and tomato fruitworms which enter the fruits or seed in the field and are not eliminated during the processing operations. This problem is nationwide in scope in so far as tomatoes are concerned, and in the instance of peas is of paramount importance to the canner and grower of this crop in Washington, Oregon, and Utah. The results of the research control program on the pea weevil have led to the discovery of rotenone dust as a specific for this pest and the development of insecticidal machinery which will quickly and effectively cover large areas. The effect of this discovery and its application has been to stabilize an industry in the Northwest that was on the verge of becoming demoralized. The results of the work on the tomato fruitworm have not been as satisfactory. However, a partial remedy has been found in the use of cryolite and calcium arsenate. There is in this instance a very definite need for a more toxic material for the control of the tomato fruitworm and the tomato pinworm.

Vegetable plant lice, such as the pea aphid, turnip aphid, and aphids affecting potatoes are pests of nationwide importance. Measures which have been developed for controlling the pea aphid have not been wholly successful. Timeliness of application of the remedy is a major factor in the effectiveness of the treatment. Recently in active cooperation with the several states information on time of application of insecticides is being accumulated, which it is hoped will contribute to an early and satisfactory solution of the problem. Methods which are now available from the investigations on turnip aphid control should serve to place the production of turnip and mustard greens in the South on a more substantial basis. The problem of aphids affecting potatoes and the control of the diseases which these pests transmit are still unsolved although some progress has been made during the past two seasons along these lines from studies conducted in Maine.

The wireworm problem, while primarily of the greatest importance to the growers working irrigated lands of the Northwest, affects growers in other areas in the United States, particularly in the southeastern early vegetable producing areas. Extensive research on the control of wireworms by the use of chemicals has shown that a few materials are effective. However, their cost is prohibitive on lands devoted to crops yielding a low return per acre. A study of soil moisture requirements and the effect of certain crops on wireworm populations has led to the recommendation of practical culture procedures which will reduce wireworm losses. Studies are being conducted on both chemical and cultural methods of control with the object of developing a cheap and effective bait.

Berry insects: In 1926 the raspberry fruitworm became a serious threat to the continued profitable production of raspberries and loganberries in the Puyallup Valley of Washington. The attack of this pest was of such a nature that the "worms" were marketed or canned with the berries, consequently the degree of "wormy" berries determined whether the crop was worth harvesting. The research work on the biology and control of this pest has led to the development of a spray schedule that has been adopted by the growers with excellent results.

Another pest of equal importance in the same area is the red berry mite, which attacks blackberry and prevents the infested fruit from turning black. Investigations of this pest have resulted in the development of satisfactory control method.

These phases of the berry insect problem have been completed and attention is now directed to the study of other important pests such as the raspberry root borer, the raspberry cane maggot, and white grubs attacking strawberries.

Sugar beet insects investigations: The emphasis on this project has been devoted first, to investigations of the beet leafhopper which acts as a carrier of the curly top disease affecting sugar beets, beans, tomatoes, cucurbits, and other crops; and second, to the beet leafhopper and certain species of plant bugs which affect the production of sugar beet seed in the Southwest.

Enormous numbers of the beet leafhopper breed in weeds such as the Russian-thistle which have replaced the original forage grasses on extensive areas of range lands and formerly cultivated lands. The leafhoppers breeding in these areas move to cultivated areas and infect susceptible crops. Studies in cooperation with the Bureau of Plant Industry have shown the possibility of obtaining a permanent control of the beet leafhopper by means of land improvement measures through ranch management. Studies of the exact status as leafhopper breeding hosts of various species of weeds growing in these breeding areas are in progress as a guide to the institution of this program.

Recent experiments in the laboratory and field have given indications that an important degree of beet leafhopper control can be achieved by the application of a combination of pyrethrum and lime-sulfur directed especially against the young beets, or at the peak of leafhopper infestation, as a protection to the varieties of sugar beets resistant to the curly-top disease which have been developed by the Bureau of Plant Industry. Even though such varieties possess a marked degree of resistance to damage by the curly-top disease, the influx of high populations of the beet leafhopper during the early season, often cause important reductions in yield. An attempt is now being made to adjust this method of control to large-scale field operations.

Preliminary experiments have disclosed that certain inbred strains of sugar beets possess a degree of resistance to the beet leafhopper. The current program includes further experiments to determine the possibility of utilizing this factor of resistance in the control of the pest.

Encouraging results have been obtained in reducing curly-top disease damage to tomatoes by placing cheesecloth covers over the seedlings, the susceptible stage of growth, when the plants are exposed to beet leafhopper attack. Similar encouraging results have been obtained by setting two or more seedling plants in each hill, which results in increases in the number of surviving plants and in crop yield. The current program includes extensive tests of these control methods under field conditions.

In the instance of sugar beets grown for seed, a program of spraying of the seedling plants in the fall with a pyrethrum-oil combination has proved effective in controlling the beet leafhopper and thus preventing serious damage by the curly-top disease. Studies have disclosed that the depredations of various plant bugs and a species of spittle bug, cause important reductions in sugar beet seed germination and yield. Work is in progress to develop control measures for these pests.

Tobacco insect investigations: The primary emphasis on this project has been devoted to investigations having for their objective the control of insects which attack tobacco in the field and in storage.

Partial success has been attained during recent years in controlling flea beetles attacking tobacco in the plant bed and in subsequent stages of growth in the field by the use of dust mixtures containing rotenone. While the use of rotenone serves to avoid the harmful residue hazard, this material does not possess sufficient residual properties to entirely protect the crop from these beetles under all conditions. Sprays or dusts containing arsenicals were found to control the flea beetles during all stages of tobacco plant growth but their full use involves the danger of harmful residues on the market product. Indications have been obtained that clean cultural practices, including the destruction of the surplus tobacco plants in the plant bed immediately after the crop is set in the field aids in removing important sources of flea beetle infestation. Further studies are in progress to discover an insecticide which will more completely control flea beetles on tobacco and not incur a harmful residue hazard. Also, the importance of clean cultural practices in the control of these pests is being further investigated.

The principal problem in controlling hornworms, one of the most serious pests affecting tobacco in the field, is the need to evolve a satisfactory substitute for lead arsenate. Cryolite has shown some promise as such a substitute. Partial success has also been attained in developing a trap, containing an attractive poisoned bait, in which hornworm moths are captured. Further effort in improving the effectiveness of this trap and the poison is now in progress.

Suitable control measures have been developed for cutworms, grasshoppers, the tobacco budworm, the vegetable weevil, and slugs, all of which often damage growing tobacco. Satisfactory progress has been made also in divising remedies for thrips, sod webworms, the larvae of the green June Beetle, and wireworms which attack tobacco in the plant bed or in the field. The current program includes research designed to improve the efficiency of these methods.

Excellent progress has been made in evolving effective methods of applying fumigants for the control of the cigarette beetle and the tobacco moth in stored tobacco. The continued losses from the ravages of these insects in tobacco stored in the open type of storage structures, however, has compelled further research to devise more effective methods for application under these conditions. The necessity of such research is emphasized by the fact that for the market season of 1941 the Commodity Credit Corporation will have made loans aggregating $90,000,000 for the purchase of tobacco which on account of world trade conditions will need to be stored for an indefinite period, and protected from insect depredations.

Investigations of insects affecting greenhouse and ornamental plants: The emphasis on this project is being devoted to the control of the following pests: (1) various species of mites affecting greenhouse-grown ornamental plants; (2) insects which are carriers of the mosaic disease on various flowering plants; (3) iris thrips; (4) red spiders, thrips, whiteflies, aphids, mealybugs and scale insects affecting vegetables and ornamentals grown in the greenhouse; (5) gladiolus thrips; (6) insects attacking flowering bulbs, and (7) insects affecting mushrooms.

Investigations have shown that hot water or vapor heat treatments are effective for the control of various species of mites on some of the important floral crops such as gerbera, cyclamen, saintpaulia, delphinium, and flowering bulbs as well as for the control of the bulb nematode in the latter crop and the iris thrips. The current program includes experiments to determine whether the method can be extended to include other susceptible crops where the tolerance limit to thermal treatments is very narrow.

Studies on insect carriers of mosaic diseases on asters and lilies have given pertinent information respecting the identity of these carriers and a control program for these pests is now under way.

Investigations on the use of sprays and dusts, and methyl bromide and hydrocyanic acid gas fumigation, for the control of bulb flies, mites and the thrips have shown the potential value of these methods as alternative remedies to the hot water method of control. Also, experiments with sprays and dust mixtures directed against the narcissus bulb fly in field plantings have given encouraging results, while preliminary tests with dry heat for the control of the bulb scale mite on narcissus bulbs in storage have shown some promise. Further experiments are in progress to determine the commercial applicability of these treatments.

Experiments during the last four years on the control of red spiders, thrips, whiteflies, aphids, mealybugs, and scale insects which infest cucumber, tomato, and lettuce and also injure floral crops grown in the greenhouse have disclosed that these widely distributed pests can be controlled by the use of various spray combinations or dust mixtures or fumigants. Tests are being continued on various crops to determine the value of the several treatments and the tolerance of the plants to such treatments.

During the last three years it has been demonstrated that a spray containing tarter emetic and brown sugar constitutes an effective control of the gladiolus thrips and does not injure the blooms. Current activities on this problem include the testing of the suitability of other antimony compounds, owing to the shortage of tartar emetic, and the adjustment of the tartar emetic-brown sugar spray treatment to commercial conditions.

Mushroom production is confronted with serious problems incident to damage caused by various pests including flies, mites, springtails, and sowbugs. Distinct advances have been made in methods of controlling these pests particularly by the use of fumigation with sulfur or with hydrocyanic acid gas, drenching with liquids containing nicotine or pyrethrum, the application of a dust mixture containing pyrethrum directed against the adults of mushroom flies, the manipulation of compost heaps in such a manner as to kill the enclosed forms of mushroom pests, and the use of light traps. The current program includes studies on the further improvement of known methods of controlling mushroom pests and the adaptation of experimental results to commercial practices.

(1) CEREAL AND FORAGE INSECTS

Appropriation Act, 1942, plus $4860 supplemental for within-grade promotions	$384,360
Budget Estimate, 1943	349,395
Change from 1942:	
Net reduction in working funds	-39,500
Additional for administrative promotions	+4,535
	-34,965

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase o decrease
1. Cereal and forage insect investigations	$266,591	$269,045	$229,545	-$39,500(1
2. European corn borer investigations	78,300	78,968	78,968	- -
3. Sugarcane and rice insect investigations	31,080	31,487	31,487	- -
4. Net cost of within-grade promotions	- -	4,860	9,395	+4,535
Unobligated balance	3,529	- -	- -	- -
Total appropriation	379,500	384,360	349,395	-34,965

DECREASES

(1) The decrease of $39,500 in this item consists of the following reductions on the project "Cereal and forage insect investigations":

(a) A decrease of $3,600 which contemplates the discontinuance of work on miscellaneous insects attacking small grains and grasses with the closing of the station at Carlisle, Pennsylvania and curtailment in the work of the station at Sacramento, California.

(b) A decrease of $21,240 which contemplates the discontinuance of investigations on Mormon cricket with the closing of the station at Winnemucca, Nevada and curtailment of the work at Bozeman, Montana.

(c) A decrease of $4,000 which contemplates the discontinuance of work on the control of insects injurious to cereal and forage crops by the use of diseases, involving a reduction of operations at Forest Grove, Oregon, and Beltsville, Maryland.

(d) A decrease of $8,171 due to the discontinuance of work which has been carried on at Yuma, Arizona on an introduced legume weevil.

(e) A decrease of $2,489 due to a reduction of expenses for travel, supplies and materials and equipment on the project in general.

WORK UNDER THIS APPROPRIATION

Objective: To discover and improve methods for the prevention and control of insect pests of corn, sorghums, sugarcane, small grains, soybeans and forage crops including grasses, clovers and alfalfa, during their growth in the field and during their storage and processing after harvest.

The problem and its significance: These crops are attacked by many different insects. Although they are the most essential and valuable crops grown, their acre value is low. Cost of control measures for the pests attacking them must therefore also be low. Estimates of the average annual losses caused by some of the more important of these insects are given below. With the special need due to war, and world conditions of adequate supplies of these staple food and feed crops, the importance of finding and improving means of preventing these losses is unusually urgent. Satisfactory control measures have not yet been found or fully developed for many of the more injurious species and the need of modifying or substituting other control measures has been made urgent by soil conservation practices, emergency storage of food reserves, and scarcity of insecticides and fumigants due to their preemption for defense activities.

Insect	Crop	Average annual loss
Earworm	Corn	$79,000,000
Hessian fly	Wheat	13,000,000
Chinch bug	Corn, sorghum & small grains	15,000,000
Grasshoppers	Cereal and forage	25,700,000
Grain and flour weevils and moths	Stored grains and cereal products	366,000,000
Alfalfa weevil	Alfalfa	891,000
Alfalfa caterpillar	"	750,000
European corn borer	Corn	4,250,000 (Including only the surveyed portion of the infested area.)
Sugarcane borer)	Sugarcane (Also a serious pest of corn)	2,791,000
)	Rice	500,000
Rice stink bug	"	700,000

General plan: In cooperation with other Departmental agencies, State Experiment stations, farmers, warehousemen and millers, to continue investigations now in progress at 28 field stations in strategic locations throughout the continental United States, to determine the habits, status as vectors of plant diseases, distribution and abundance of, and losses caused by, the insect pests of the above mentioned crops, and with this information as a basis to devise practicable measures of control through the adjustment of cultural and storage practices, development of resistant crop varieties or cheap, easily applied insecticides and fumigants, and, particularly in the case of accidently introduced foreign pests, the introduction and dispersion of their natural enemies. The work is divided into three financial projects, as follows: (1) cereal and forage insect investigations, (2) European corn borer investigations, and (3) sugarcane and rice insects.

Example of progress and current program: Most of these investigations, such as the breeding of resistant crop varieties, ecological studies to discover cultural methods of control, including beneficial crop rotation and practical field trials of these methods, require rather long terms of years of connected observations for the attainment of decisive results. However, while progress is necessarily gradual, definite results are achieved each year. The more important of the current results are outlined in the following sections.

Cereal and forage insect investigations:

Hessian fly: One highly resistant wheat, Big Club 38, suitable for commercial use in California has been produced and two other promising varieties possessing both fly and disease resistance suitable for use in that area are now in prospect. Current wheat breeding operations in the hard and soft winter wheat regions of the Central and Eastern States now promise to yield desirable commercial varieties suitable to that area having high resistance to the fly and to several diseases, such as the rusts and smuts, as well. Additional data on safe sowing dates to avoid fall infestation of wheat in the Atlantic States and on the distribution and importance of different species of parasites have been obtained.

Chinch bug: Better resistant varieties of sorghums and corn are being developed and an effective oil-emulsion spray, fortified with nicotine or derris, practicable for use on high-value corn being grown for breeding purposes or for the production of hybrid seed has been found. Preliminary experiments have indicated the possibility that under some conditions chinch bug injury to sorghums may be partially overcome by the application of certain chemical fertilizers. Field tests of a long series of barley varieties indicated wide differences in susceptibility, taking advantage of this fact has possibilities in meeting the chinch bug problem in areas such as Oklahoma where the barley acreage is increasing.

Corn earworm: A material degree of resistance in several inbred lines of field and sweet corn has been indicated by cooperative tests conducted in 12 Central and Eastern States and intensive studies in Illinois and Indiana. Oil-insecticide mixtures and equipment for applying them to sweet corn ears have been further perfected and considerably used by growers.

Corn flea beetles: In studies of these insects as vectors of the corn wilt disease, evidence was obtained that the disease is not only carried over the winter in the bodies of the surviving beetles, but also in wild grasses that show no visible evidence of the disease. The beetles feed on these grasses early in the spring before growing corn is available and previously uninfected individuals may become carriers of the disease from these grasses to growing corn as it becomes available to them.

Alfalfa aphid: Field observations point to effective cultural control by winter or early spring cultivation or pasturing. Highly resistant experimental lines have been found and breeding operations are in progress to introduce this resistance into desirable commercial lines.

Lygus species: Ecological studies and large scale trials have indicated the feasibility of greatly reducing losses in alfalfa seed production caused by these insects in certain areas through the general application of control measures consisting of prompt and thorough winter clean-up of host plants and observance of a uniform date for cutting the first hay crop and starting the first seed crop.

Leafhopper on alfalfa: Field trials of sulphur-pyrethrum dust showed remarkable control, 28% increase in yield of hay, and possibility of profitable commercial use.

Vetch bruchid: A 92% reduction in abundance of adult weevils and 60-70% reduction of larval infestation in seeds resulted from a trial of 0.75% rotenone dust for control of this weevil in an Oregon field of hairy vetch. Additional liberations of two species of foreign parasites were made in the infested areas of North Carolina and Oregon and these were recovered later in the year in one locality where colonized, showing initial establishment.

Grasshoppers and Mormon crickets: Ecological studies have indicated ways of reducing costs of surveys basic to control operations by reduction in size of samples and restriction of sampling to wheat stubble in certain areas where wheat is a major crop and the migratory grasshopper is the chief noxious species. Field trials have shown that sodium fluosilicate is a good substitute for sodium arsenite in grasshopper bait, that the proportion of water in bait and the dosage per acre can be much reduced without material loss in efficiency, at least on non-irrigated crops, and that small quantities of certain cheap grades of mineral oil can be substituted for the water in bait without impairing its effectiveness. The lower water content and the substitution of oil reduce its weight and make it more suitable for distribution by airplanes and simplify mixing it in areas where water is scarce. An inexpensive power bait spreader that can be mounted in a truck has been devised and found to be a decided improvement over the old trailer-spreader.

Stored-grain insects: Studies on the best methods of fumigating grain in Ever-normal Granary and farm storage have shown what fumigants, dosages and methods of application are most practical. A method of retarding re-infestation by the application of certain cheap grades of mineral oil to the surface layer of shelled corn in bins after fumigation has been developed. By adding 10% of methyl bromide to the standard ethylene dichloride-carbon tetra-chloride grain fumigant it was found possible to reduce the required dosage from 6 to 2 pounds per 1,000 bushels, thus greatly extending the usefulness of the limited supplies of this fumigant that can be spared from defense industries for grain fumigation. Observations in Ever-normal Granary bins indicated that the presence of chaff and broken kernels in shelled corn is very conducive to insect infestation and that turning and cleaning to cool the corn and remove chaff and insects is beneficial. In investigating ways of preventing infestation of flour while in transit, the use of multiwalled paper sacks with gummed tape closures and the lining of cars with heavy wrapping paper before loading were found to have considerable merit.

White-fringed beetle: Tests have shown the superiority of calcium arsenate and cryolite sprays containing adhesive agents over these insecticides when used in dust form. Plot experiments and ecological studies indicate the possibility of practical farm control through modifications in crop rotations and tillage practices.

Legume weevil: Biological and food plant studies have shown that this newly discovered foreign insect has one generation a year, that it is active only during the winter and spring in the two restricted areas in southern Arizona where it is known to occur, that it can mature on a number of legumes, including alfalfa, although this crop apparently is not a favored host, that sour clover is its principal food plant where it now occurs, and that the adult beetles can fly and could be carried to uninfested areas by the ordinary transportation agencies or in agricultural commodities. A preliminary account of the available information on this insect has been published.

European corn borer investigations: While studies of the borer's habits in relation to clean-up and other cultural practices showed an average of 98% reduction in borers surviving the winter and spring, they also revealed the survival of considerable numbers of larvae in places previously considered negligible sources of infestation and the need of even more complete destruction of overwintering borers because of their high reproductive capacity. Experiments to determine optimum time of planting of corn showed mid-season plantings to be least infested. The experiments on this particular phase of the program have been discontinued and the funds utilized in development of other control measures. Field trials indicated that the borer can be profitably controlled in market sweet corn by means of insecticides applied with power equipment and that costs can be reduced by further improvement of such equipment, of the insecticides, and of the application schedules. Insecticidal methods for control of the borer in dahlias have been worked out and the experiments discontinued. Intensive studies of borer resistance in corn have revealed several resistant strains, the possibility that this resistance can be intensified by selection and breeding, the fact that resistance is transmissible to progeny, and the probability that by further work in cooperation with corn breeders losses can be reduced through the production of resistant hybrids for commercial use. Colonization of introduced parasites has been continued and field studies have shown that some of these parasites have become of material benefit in certain New England areas where first established.

Sugarcane and rice insects:

Sugarcane borer: Removal of dead-hearts from the growing crop and winter destruction of cane trash and stubble were shown to be beneficial, field-scale experiments with cryolite dust insecticide indicated profitable results, and variety tests showed significantly less infestation in certain commercial and experimental selections. One introduced parasite of the sugarcane borer was successfully bred in some numbers and liberated in several localities.

Vectors of chlorotic streak: Preliminary experiments showed that this disease is transmitted by at least one species of insect, the sharp-nosed grain leafhopper.

Sugarcane beetle: Further evidence indicated the benefit of heavier planting and the use of varieties which tiller profusely, to overcome the loss of stalks cut off by the beetle.

Test Indian sugarcane mite: Surveys and trials of suppressive measures served as the basis of an apparently successful attempt to eradicate this recently discovered pest.

Rice stink bug: Experiments indicated that this insect is responsible for peckiness in rice, both directly and by inoculating the kernels with fungi through its feeding punctures.

Rice water weevil: In laboratory tests the larvae feeding on the roots were found to provide for entrance and injury by Pythium root rot, and application of certain fertilizers in field plots were shown to be helpful to the plants in overcoming this injury.

Insect pests of stored rice: Methods of application and dosages of fumigants have been further perfected, including the successful use of methyl bromide for fumigation of large quantities of rice stored in tight warehouses. Experiments on methods of packaging rice to prevent reinfestation indicate no current commercial types of packages to be fully effective and the need of continuing the investigation of methods of packing rice in sealed tin cans.

(m) EUROPEAN CORN BORER CONTROL

Appropriation Act, 1942	$10,000
Budget estimate, 1943	- -
Decrease	-10,000

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Decrease
Inspection and certification of products regulated by quarantines on the European corn borer	$26,125	$10,000	- -	-$10,000(1
Unobligated balance	1,814	- -	- -	- -
Total appropriation	27,939	10,000	- -	-10,000

DECREASE

(1) The decrease in working funds of $10,000 in this item for 1943 involves the elimination of the subappropriation. The amount provided for 1942 was not adequate to carry on the work for which the appropriation was made and the service therefore is being terminated during the current fiscal year.

WORK UNDER THIS APPROPRIATION

Objective: To inspect, certify, and thus facilitate, the movement of articles regulated by state quarantines on the European corn borer.

The problem and its significance: The Federal European corn borer quarantine was revoked on July 15, 1932. This resulted in a variety of State quarantines and regulations, a number of which limited the entry of products likely to carry the corn borer to those certified by the United States Department of Agriculture as being free from the insect. The host products designated in the State quarantines consist of corn, broomcorn, sorghum, sudan grass, chrysanthemums, asters, zinnias, cosmos, hollyhocks, dahlias, gladiolus, beets with tops, celery, beans, rhubarb and oat and rye straw.

General plan: The territory infested by the European corn borer is largely the same as that quarantined on account of the Japanese beetle and the gypsy moth. These two Federal quarantines require inspection and certification of some of the products requiring inspection and certification by state quarantines as the European corn borer. Where such conditions prevailed dual certifications are made without additional inspection. When this is not possible special inspections are made to determine information needed to meet certification requirements of state quarantines on the European corn borer.

Examples of progress and current program: The following tabulation gives the number of shipments certified and the value of the products for the last four fiscal years:

Fiscal year	Shipments inspected	
	No.	Value
1938	21,460	$199,000
1939	50,190	157,000
1940	36,661	205,000
1941	46,074	275,416

The work was discontinued as of the end of the current calendar year, December 31, 1941.

(n) BARBERRY ERADICATION

Appropriation Act, 1942, plus $1635 supplemental for within-grade promotions	$184,135
Budget estimate, 1943	228,470
Change from 1942:	
Net increase in working funds	+42,500
Additional for administrative promotions ..	+1,835
Total increase	+44,335

PROJECT STATEMENT

	1941	1942 (estimated)	1943 (estimated)	Increase
1. Barberry Eradication:				
(a) Eradication of the barberry in the 13 States where work was begun in 1918..	$136,679	$157,050	$191,550	+$34,500(1
(b) Eradication of the barberry in other States.....	20,304	20,800	28,800	+8,000(1
(c) Inspection of nurseries which ship barberries interstate.....	4,650	4,650	4,650	- -
2. Net cost of within-grade promotions.....	- -	1,635	3,470	+1,835
Unobligated balance.....	867	- -	- -	- -
Total appropriation.....	162,500	184,135	228,470	+44,335

INCREASE

(1) The increase of $42,500 in this item for 1943 is to provide (1) the services of technically-trained field supervisors who are urgently needed to direct field operations in the barberry eradication program, but who are no longer available from W.P.A. sources owing to the discontinuance of "Federal Agency" projects, as of Jan. 1, 1942, and (2) for transportation of supervisors who are responsible for the technical direction of the labor program. This amount will be used for direction and coordination of State-wide or local W.P.A. projects and to supplement projects of this kind in localities where W.P.A. labor cannot be used effectively.

Objective: To continue in key supervisory positions, field employees trained and experienced in stem rust control work who are capable of making pre-eradication surveys, mapping work to be done, and directing the work of laborers employed locally or through W.P.A., thus insuring the effective application of control measures throughout the 17 States participating in the program.

The problem and its significance: Since 1935, funds appropriated under the several Emergency Relief Appropriation Acts and transferred to the Department of Agriculture for use in connection with the stem rust control program have averaged $1,246,649 annually, permitting the year around employment of approximately 1,730 men. Now that Federal Agency projects have been discontinued, as of January 1, 1942, labor must be secured from local cooperating agencies or through local W.P.A. offices and a greater share of the cost of supervision and transportation of workers must be assumed by the sponsoring agency. Thus, it becomes necessary to provide from regular funds salaries for trained field supervisors and scouts whose services are needed to direct control operations especially in the Dakotas, Montana, Wyoming, western Nebraska, and parts of Minnesota, Iowa, and Missouri, where men inexperienced in work of this nature can be used effectively only when employed in small crews of three to five men each. This will cost $33,400 annually. To operate and keep in repair automotive equipment used by supervisors would cost approximately $4,100; in addition, $5,000 will be needed for other non-labor items including chemicals used for eradication purposes.

Financial requirements: The continuation of the current cooperative program of barberry eradication is predicated on securing a goodly part of the labor from those given assistance from appropriations for emergency relief. To provide additional supervision and non-labor expenses required to insure effective operation of a regional stem rust control program during the fiscal year 1943 under Bureau-sponsored projects in the State W.P.A. program and effectively use and integrate into a unified program labor employed by local cooperating agencies, $42,500 is needed. This will replace needs supplied from other sources under the Federal Agency program that has been conducted for the past six years with funds transferred to the Department from emergency relief sources. The needed requirements are itemized as follows:

Personnel (field)		Other expenses	
5 - SP-6	$10,000	Supplies and Materials	$2,600
8 - SP-5	14,400	Travel expenses	1,500
60 Months (Seasonal) SP-5	9,000	Equipment	5,000
	$33,400		$9,100

Total increase $42,500

WORK UNDER THIS APPROPRIATION

Objective: To prevent widespread and costly damage to wheat, oats, barley, and rye from stem rust epidemics of local origin by the eradication of rust-spreading barberry bushes in the important grain-growing areas of the United States.

The problem and its significance: The common barberry, Berberis vulgaris, is an introduced shrub that has been planted throughout the United States

since the early settlement of this country. It escaped from cultivation and became widely distributed in timbered areas, along stream banks, fence rows, and other uncultivated lands. The problem involves the location and eradication of these bushes in 17 northern grain-growing States, and of native barberry bushes in grain-producing areas in western Colorado and in Virginia and West Virginia.

Stem rust is the most destructive of all diseases that attack wheat, oats, barley, and rye. It is caused by a fungus that lives on the leaves of barberry bushes in the spring and on grains and grasses during the remainder of the year. Each spring the winter spores germinate and cause infection on barberry leaves. Spores produced on the barberry leaves infect nearby grains and grasses producing the summer stage of the disease which spreads from field to field often resulting in severe damage to crops after the principal cost of production has been incurred. This stage of the rust does not survive the winter in the northern part of the United States. Thus, by removing barberries grain crops are protected from rust epidemics of local origin.

It is estimated that more than three-quarters of the necessary field work in The Dakotas, Montana, Wyoming, eastern Colorado, and western Nebraska has been completed. In this area large amounts of labor will no longer be needed but it is extremely important that a few trained men be retained for the periodic clean-up of known infested areas. In southwest Colorado, eastern Nebraska, Iowa, Missouri, Minnesota, and States east of the Mississippi River, namely, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, Virginia, and West Virginia, the program is not so far advanced. It is estimated that about 60 percent of this area has been completed, but a substantial labor program is needed to remove the numerous bushes still growing on non-cultivated lands.

General plan: Under Federal supervision barberry eradication is conducted in cooperation with the affected States. Close working relations are maintained with State and local agencies interested in the program, particularly those engaged in breeding new and improved rust-resisting grains. Surveys are conducted each year to determine where and to what extent stem rust is causing damage as a basis for applying effective control measures. To locate and destroy scattered bushes remaining in North and South Dakota, Montana, Wyoming, eastern Colorado, and parts of Minnesota and Missouri, a systematic educational program is carried on as a means of retaining the active assistance of property owners in preventing reinfestation of areas where the initial eradication has been completed.

In States from Iowa east to Virginia and Pennsylvania, a vigorous program using large amounts of labor will be continued until a complete survey has been made of all extensive barberry infestations and control benefits have been extended to counties that have not yet received the initial intensive survey. An intensive survey is still needed on about 40 percent of the area. Rework at regular intervals has been determined the only effective method of preventing reinfestation in areas where seed became widely distributed before the original bushes were destroyed. Important State cooperation is received in this work, the total direct financial contribution for the fiscal year 1942 being $99,350.

Examples of progress and current program:

Eradication of the barberry in the 13 States where work was started in 1918: More than 70 percent of the area in Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming, where the eradication of barberry bushes growing wild on non-agricultural lands could be accomplished only by an extensive survey has been covered since 1933. Much of the field work has been done with labor obtained from emergency relief sources.

Farmers, processors, and the consuming public have derived material benefit from the barberry eradication program. Losses from stem rust of wheat that averaged more than 57,000,000 bushels annually during the period 1916-20 have been reduced to an average of about 29,000,000 bushels annually for the period 1930-39, despite two years during which comparatively heavy rust losses were experienced in the upper Mississippi River Valley States as a result of the south-to-north movement of rust for which local barberry bushes were not responsible. The total cost of barberry eradication to the Federal Government to date has been less than one-half of the resulting annual savings to grain farmers.

Eradication of the barberry in other States: In 1933 the stem rust control program was extended to include Missouri and in 1935, after repeated attempts to control the disease locally had proved unsuccessful, similar cooperative programs were undertaken in the grain-growing areas of Pennsylvania, Virginia, and West Virginia.

Approximately 90 percent of the territory in Missouri is now considered relatively free from barberry bushes. The remainder will require at least one and in some instances two or more resurveys to prevent seedling bushes from developing.

In northeastern Pennsylvania where feed for livestock is one of the most important crops grown, the initial work has now been completed and farmers report having harvested their first profitable small-grain crops in more than 30 years.

In Virginia and West Virginia the rust problem is closely associated with a native species of barberry, (B. canadensis) which is not found to any extent elsewhere in the States comprising the control area. There is little evidence that the native barberry spreads to any extent as a result of seed scattered by birds or animals and immediate results are obtained as the initial control work is completed. In Pennsylvania, Virginia, and West Virginia sufficient time has elapsed since the original control work was completed to prove the practicability of protecting grain crops from stem rust by the eradication of barberry bushes.

Inspection of nurseries which ship barberry interstate: Eliminating rust-susceptible species of barberry from nurseries is an essential part of the stem rust control program. Each of the 17 States participating in this work has laws prohibiting the propagation or sale of other than approved varieties. A federal quarantine prohibits shipment of susceptible

species into or between States participating in the control program. In order to properly administer the quarantine, susceptibility tests are conducted to determine the identity and rust reaction of any new species that appear on the market, and nurserymen throughout the country who are dealing in barberry bushes are kept informed of results.

In 1940 permits were granted to 47 nurseries to ship immune species of barberry into States protected by the Federal quarantine. Permits were refused 8 nurseries and 8 others making application for inspection did not need permits. As a result of this inspection, 608 susceptible barberry bushes were destroyed in the 63 nurseries examined.

SUPPLEMENTAL FUNDS

Direct Allotments

Projects	Allotments, 1941	Estimated allotments, 1942
Emergency Relief Appropriation Acts: Barberry eradication	$768,000	$404,999

(o) COTTON INSECTS

Appropriation Act, 1942, plus $1,415 supplemental for within-grade promotions	$145,959
Budget estimate, 1943	123,895
Change from 1942:	
Net reduction in working funds	-24,544
Additional for administrative promotions	+2,480
Net decrease	-22,064

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Cotton insect investigations:				
(a) Insecticides for boll weevil control, investigations of	$17,545	$18,900	$18,900	- -
(b) Seasonal development, biology, ecology, and status of the boll weevil, investigations of	11,000	12,000	11,500	-$500 (1)
(c) Boll weevil control on Sea Island cotton, investigations of	11,500	10,500	1,500	-9,000 (1)
(d) Varietal resistance to the boll weevil, investigations of	5,000	5,000	5,000	- -
(e) Natural Enemies of the pink bollworm, investigations of ...	5,200	5,200	5,200	- -
(f) Insecticides for pink bollworm control, investigations of	5,000	5,000	5,000	- -
(g) Cultural practices and varietal resistance for control of the pink bollworm, investigations of	8,000	8,000	8,000	- -
(h) Seasonal development, biology, ecology, and status of the pink bollworm, investigations of	9,500	9,500	9,500	- -
(i) The cotton flea hopper and related insects, investigations of	18,000	19,300	13,300	-6,000 (1)
(j) Stainers and stink bugs injurious to cotton, investigations of	13,000	9,240	2,500	-6,740 (1)
(k) Bollworm, investigations of .	8,000	7,600	7,600	- -
(l) Leaf aphids injurious to cotton, investigations of	5,500	10,300	10,300	- -
(m) Root aphids injurious to cotton, investigations of	5,000	2,700	2,700	- -
(n) Thrips injurious to cotton, investigations of	4,000	3,000	3,000	- -
(o) Seasonal occurence, distribution, damage, and biology of various cotton insects, investigations of	6,544	5,944	4,640	-1,304 (1)
(p) Dissemination of information to the public regarding cotton insects and their control	10,300	10,600	9,600	-1,000 (1)
(q) Importation of natural enemies of cotton insects	1,000	1,760	1,760	- -

PROJECT STATEMENT - Continued

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
2. Net cost of within-grade promotions	- -	1,415	3,895	+2.480
Unobligated balance	455	- -	- -	- -
Total appropriation	144,544	145,959	123,895	-22,064

DECREASE

(1) The decrease in working funds of $24,544 in this item for 1943 contemplates the discontinuance of all cotton insect investigations in the states of Arizona and Florida and of investigations of insects injurious to sea island cotton in Georgia. This reduction is in line with the desirability of concentrating on cotton insect work in the main cotton producing area and on insects attacking the principal cotton crop. The laboratories at Tucson, Arizona and Mesa, Arizona and Gainesville, Florida will be closed and the work of the Tifton, Georgia laboratory reduced.

WORK UNDER THIS APPROPRIATION

Objective: To develop new methods and to improve the present measures of controlling insects attacking cotton in order to lower the cost of production and increase farm income.

The problem and its significance: Cotton is grown on 25,000,000 acres in 19 states and is the most important crop in 12 states. Cotton and cotton products are indispensable items in every day and defense use. The annual production of approximately 12,000,000 bales of lint is used for clothing and other textiles; the 1,113,000 bales of linters is used in making cellulose for explosives and other purposes; the 1,409,000,000 pounds of oil for food, soap, glycerine, paints, and many other items; the 2,023,000 tons of cottonseed meal is the principal concentrated protein food for milk and beef production. Insect damage is the principal hazard to profitable production and causes losses of some $200,000,000 annually. Losses from boll weevil in 1941 were more serious than in many years, particularly so in the older cotton production sections of the Southeast. These losses were intensified by a shortage of insecticides and dusting machines, partly caused by curtailment of production due to defense activities.

General plan: The work consists of field and laboratory experiments conducted in cooperation with State Experiment Stations, other Federal agencies, and farmers. Research laboratories are located in regions representative of insect conditions in South Carolina, Georgia, Florida, Mississippi, Louisiana, Texas, and Arizona. New insecticides and combinations of insecticides are tested in the laboratory and cages against various cotton insects and the more promising materials are then further tested under field conditions. The life histories and habits of insects are studied as a basis for developing control and suppressive methods, and preventing spread to new areas. Records are made of the seasonal abundance and damage of insects in different areas and timely information on control furnished farmers.

Examples of progress and current program: Special emphasis has been given in recent years to improving calcium arsenate. From 20 to 40 million pounds of this insecticide are used annually for boll weevil, bollworm and leaf worm control and only a slight increase in its effectiveness would save growers thousands of dollars. Studies have shown that the water-soluble arsenic and the size of particles influence the toxicity of calcium arsenate and that these factors can be controlled in the manufacturing process without increasing the cost. Calcium arsenate with high water-soluble arsenic and larger particles has been found more toxic to insects in cage tests but has not given larger gains than intermediate or low water-soluble calcium arsenate in field tests probably because of the greater increase in aphids following its use. The adverse effects of calcium arsenate on the plant, parasites, and predators that often cause leaf aphids to increase to injurious numbers is the principal disadvantage to its use. Considerable progress has been made in overcoming this objection by the addition of rotenone, nicotine, and zinc or iron salts to the calcium arsenate. Small quantities of derris or other dusts containing rotenone added to calcium arsenate gave good cotton aphid control in the 1939 and 1940 field tests and was recommended for use in 1941. However, the results were not entirely satisfactory in some sections of the cotton belt and further work is needed on the relation of soil types, conditions of plant growth, and other ecological factors to the effectiveness of rotenone. Additional information is also needed on the possibilities of overcoming the injurious effects of calcium arsenate on the plants and aphids by reducing the alkalinity by adding metalic salts or other modifications in the process of manufacture.

Experience in Georgia and Florida has shown that the revival of the sea island cotton industry in the United States is dependent upon controlling the boll weevil. Weevil control on sea island cotton is more difficult and expensive than on short staple because of the longer growing period and more severe damage to bolls, but recent experiments have shown that it is economically feasible to control this insect on sea island.

Cotton in Arizona and other irrigated sections of the Southwest has been penalized several dollars a bale on account of staining and poor grades of lint. This condition previously attributed to physiological and growth conditions of the plants has been proven to be caused by several species of sucking insects feeding on the green bolls. The insects migrate to cotton from sugar beets, alfalfa, and other vegetation and preventive measures are difficult. Experiments in dusting with a mixture of paris green and sulphur have given effective control. In large-scale field experiments dusting by airplanes in cooperation with growers gave an average of more than $9.00 per acre profit from increased yields and better grades. Several thousand acres were dusted commercially this season as a result of this work and a rapid increase in use is expected. Although these investigations have been conducted only in Arizona, approximately 500,000 bales of cotton are produced annually in areas of Texas, New Mexico, and California where this group of insects are serious pests.

An effective control for the flea hopper by dusting with sulphur has been developed and is extensively used in east Texas. Investigations are being continued on improvements in method of application by the use of more finely ground sulphur dust which adheres to the plants better or by spraying in the areas where winds and lack of dew make dusting difficult.

The bollworm occurs over the entire cotton belt and is at times the most injurious cotton insect in some areas. It is also one of the most difficult to control because of the short time that insecticides are effective between hatching and the entrance of the larvae into the squares or bolls. Several arsenical and fluorine insecticides have been found effective when applied at the correct time, and efforts are being continued to develop more practical control methods.

In the work on the pink bollworm special emphasis has been given to phases that are of immediate importance in preventing spread to new areas, reduction of populations or eradication in the limited areas now infested, and to a long range program of developing control methods for use if this insect should become generally established in the United States. Investigations on the time of year when hibernating larvae are formed, how and where they spend the winter, and factors that influence their survival have resulted in the field cleanup and other suppressive measures used in the control program. Studies of the alternate host plants and time of spring emergence have been of value in determining the period when it is necessary to maintain a closed season when no cotton is available for food. Developing improved cultural practices and the introduction of better varieties of cotton in the infested area of the Big Bend of Texas have enabled farmers to materially reduce the losses caused by the pink bollworm. Extensive studies of various insecticides have failed to show any that are entirely effective but some of the fluorine compounds have given promising results.

(p) PINK BOLLWORM AND THURBERIA WEEVIL CONTROL

Appropriation Act, 1942, plus $3,815 supplemental for within-grade promotions	$530,615
Budget estimate, 1943	483,135
Change from 1942:	
Net reduction in working funds	-51,800
Additional for administrative promotions ..	+4,320
Net decrease	-47,480

PROJECT STATEMENT

Projects	1941	1942 (estimate)	1943 (estimate)	Increase or decrease
1. Pink bollworm control operations:				
(a) Supervision of treatment and movement of cotton or cotton products as required by Federal quarantine on pink bollworm ...	$190,497	$192,000	$192,000	- -
(b) Inspection within regulated area to determine status of pink bollworm ...	31,702	34,000	34,000	- -

PROJECT STATEMENT - Continued

Project	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Pink bollworm control operations: (Continued)				
(c) Inspection outside regulated area to determine possible presence of pink bollworm	$116,004	$122,900	$122,900	- -
(d) Cleanup operation for control and eradication of pink bollworm	94,729	98,177	46,377	-$51,800(1)
(e) Vehicular inspection to determine compliance with quarantine on pink bollworm	22,563	23,400	23,400	- -
(f) Eradication of wild cotton in Florida for protection against infestation of pink bollworm	51,842	53,515	53,515	- -
(g) Thurberia weevil control	2,725	2,808	2,808	- -
2. Net cost of within-grade promotions	- -	3,815	8,135	+4,320
Unobligated balance	16,738	- -	- -	- -
Total appropriation	526,800	530,615	483,135	-43,665

DECREASE

(1) The decrease in working funds of $51,800 in this item for 1943 contemplates a curtailment of the project for the clean-up of cotton fields. The work principally affected will be that which has been carried on in the lower Rio Grande Valley of Texas.

WORK UNDER THIS APPROPRIATION

Objective: To prevent the spread of the pink bollworm and the thurberia weevil from infested areas within the United States; to eradicate infestation of the pink bollworm from sections remote from the infested area; and to cooperate with the Mexican Government or local Mexican authorities in survey and control operations on the pink bollworm; thus protecting cotton production within the United States from these important pests which are established only in limited areas along the Mexican border.

The problem and its significance: The pink bollworm of cotton, which is recognized by entomologists and growers of all cotton producing countries as the most destructive of all cotton insect pests, is a potential menace

to the cotton crop of this country, particularly to the southern half of the cotton belt which comprises more than half of the cotton acreage, and is comparable to areas in other countries where the pest has inflicted severe losses. It is known to inflict an annual average loss of more than 20% in several of the principal cotton growing regions of the world. Its habit of feeding inside the immature cotton boll results in stained and cut fibers, and a reduction of the oil content of the seed.

The Thurberia weevil is a dry land form of the cotton boll weevil native to mountain areas of Mexico and Arizona. Its principal host is a kind of wild cotton but it breeds freely on cultivated cotton and develops best under climatic conditions unfavorable to the true boll weevil.

The establishment of these pests in the main cotton producing sections of our country would cause excessive losses and further increase the difficulty of producing cotton, reduce the quality of lint and the production of seed valuable for oil meal and similar products.

General plan: The work consists of enforcement of the Federal quarantine to prevent spread by artificial means; cooperation with the states to assure compliance with required control measures within the infested areas; conducting control operations to prevent the build-up of infestation that would cause increased damage; eradication of infestations where practicable; and the inspection of the cotton to determine the status of infestation in areas that are now known to be infested, and to determine the presence or absence of the insects in localities in which they are not known to exist. These activities are all conducted in cooperation with state agencies, other federal agencies, farmers, agricultural associations and organizations representing cotton growers, processors, factors and exporters, and other local agencies. An important phase is the control work carried on cooperatively with the Agricultural Department of the Republic of Mexico. State cooperative contributions have amounted to $93,000 in each of the past two years.

Full time employees are located in four states with field headquarters at San Antonio, Texas. District and subdistrict stations are maintained within the regulated areas at places conveniently accessible to the growers and cotton processors. The administration of the program is on a work project basis, each work project embracing a main objective of the program.

Examples of progress and current program: The following paragraphs give significant developments under each work project:

The benefit obtained by a community from following a planned control program recommended by this Bureau, and involving its participation in cooperation with state authorities and local growers, that takes advantage of known habits of the pink bollworm can best be demonstrated by the experience gained by the farmers in the heavily infested Big Bend area of Texas. The planting of cotton is delayed in the spring so as to deprive the earlier emerging moths of places to deposit their eggs where the larvae could develop; the crop is picked promptly upon maturity in the fall and all remaining parts of the plants left in the field are then destroyed in order to kill the large numbers of larvae hibernating in such material. This is

followed by the maintenance of a long host-free period by the destruction of any volunteer plants that might sprout during the spring and which would supply the pink bollworm with food, thereby defeating the efforts of the delayed planting date.

Farmers in the Big Bend estimated that their losses in 1938 ranged from 25 to 80 percent of their crop, their average being 51%. No effort was made that year to control the pest but at the close of the season a thorough cotton field cleanup was carried out in anticipation of the beginning of such a program in 1939. A specific example of benefit to the community from the control program was the production by a farmer of 20 bales of strict middling lint 1-1/16" in length on 20 acres, whereas he obtained only 6 bales of low grade cotton from the same acreage in 1938. Another farmer, after obtaining a poor yield of low quality cotton in 1938, due to the heavy pink bollworm infestation, produced 37 bales on 21-1/2 acres in 1939, about three-fourths of which was graded strict middling. Many other farmers reported similar benefits from the control program in both 1939 and 1940. One of the most important effects to the cotton belt as a whole of the reduced infestation in the Big Bend of Texas and the area in Mexico adjacent thereto is reflected in the substantial decrease in pink bollworm infestation of other regulated areas in northwestern Texas and southeastern New Mexico. This reduction in infestation in these areas, where a tremendous acreage of cotton is present, reduces considerably the threat of immediate spread of the pink bollworm.

Similar control measures, particularly that portion of the program involving shortening of the growing season, have been practiced in the Lower Rio Grande Valley of Texas and the area adjacent thereto in Mexico. The infestation showed considerable decrease in the 1941 crop but due to the unfavorable weather conditions in the fall of 1941 it is possible that there will be an increase of the infestation in the 1942 crop over that present in 1941.

A part of the current pink bollworm program of greatest interest to cotton growers in the main cotton belt is the inspection made for the pink bollworm, first, in the regulated areas now known to be infested with the pink bollworm to determine the changes occurring in the intensity of the infestations and whether any part or all of these areas can be released with safety from quarantine, and, second, inspections made in areas thought to be free from the pest to determine as early as possible whether the pink bollworm has been carried to new localities and to eradicate such incipient infestations if any are discovered. In the regulated areas the growers and processors realize that the quarantine and control efforts of the Department are meeting with success, and in the free areas they feel that the regulatory measures conducted inside the quarantined areas have prevented spread of the pink bollworm to their communities. The improved methods of inspection, utilizing a large number of units of gin trash inspection machines, make it possible to give much more effective and thorough inspection of the cotton belt as a whole than is the case when it was necessary to conduct field inspections of cotton bolls during the growing season. The present method of inspection also gives more accurate and complete information as to the degree of infestation present in regulated areas, thereby making it possible to determine the effectiveness of control practices undertaken by the Bureau and cooperating agencies and farmers.

The value of the program designed eventually to eradicate the wild cotton from southern Florida was proved several years ago when it became possible to release from quarantine areas in north Florida and south central Georgia which had become infested with the pink bollworm through its spread from the wild cotton plants in southern Florida. The status of the wild cotton eradication program indicates it is entirely feasible to eradicate, eventually, that plant from southern Florida, with consequent elimination of that threat to the main cotton belt. There has been a substantial decrease in the number of plants eradicated each year, and the infestation of the pink bollworm in that area is being held by the efforts of the Bureau at a low enough level to prevent its spread to the main cotton belt, pending final eradication of all wild cotton in southern Florida.

SUPPLEMENTAL FUNDS

Direct Allotments

Project	Allotments, 1941	Estimated allotments, 1942
Emergency Relief Appropriations: Wild cotton eradication	$54,600	$22,000

(q) BEE CULTURE

Appropriation Act, 1942, plus $1,195 supplemental for within-grade promotions	$84,195
Budget estimate, 1943	82,100
Change from 1942:	
Net reduction in working funds	-3,000
Additional for administrative promotions ...	+905
Net decrease	-2,095

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Bee culture and apiary management	$82,726	$83,000	$80,000	-$3,000 (1)
2. Net cost of within-grade promotions	- -	1,195	2,100	+905
Unobligated balance	274	- -	- -	- -
Total appropriation	83,000	84,195	82,100	-2,095

DECREASE

(1) The decrease in working funds of $3,000 in this item for 1943 is due to the discontinuance of investigational work on the causes of spotted brood in healthy colonies and curtailment of studies having to do with the utilization of pollen by adult bees during the wintering period. This will decrease the operations being carried on from the stations at Laramie, Wyoming, and Baton Rouge, Louisiana.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows:

> Bee Culture: For bee culture, apiary management and the propagation and distribution of bee breeding stock, $82,100.

This additional language is recommended to authorize the distribution of queen bees propagated in connection with the experimental work to develop varieties or strains of bees resistant to American foul brood. As a result of the investigations which have been carried on in cooperation with states, several strains of bees resistant to American foul brood disease have been developed. Some of these are superior, and in connection with this work it is desired that they be made available to bee keepers for further propagation and utilization. Such distribution will expedite the experimental work. It is believed that this is the first step in a program which may later be extended to provide superior bee breeding stock for the use of bee keepers.

WORK UNDER THIS APPROPRIATION

Objective: To make beekeeping sufficiently attractive and profitable over the widest possible area of the United States to insure the adequate pollination of crops which are dependent upon insects for cross pollination and to utilize the existing sources of nectar for the production of honey and wax (1) by reducing losses of colonies from disease, adverse wintering conditions, and mismanagement, and (2) by promoting the use of better strains of bees and better methods of apiary management.

The problem and its significance: Every state in the Union is dependent to a greater or less extent on honeybees as pollinating agents for many important crops. Beekeeping does not compete with or crowd the production of any agricultural commodity, but supplements and makes possible the growing of apples, pears, plums, cherries and other orchard fruits, numerous small fruits, almonds, clovers and other forage plants, melons, cucumbers and vegetables of many sorts. In addition, the production of honey and beeswax conserves a natural resource, nectar, that otherwise would be wasted.

The number of colonies exceeds 4 million representing an investment above 25 million dollars, with an annual production of some 160 million pounds of honey, 8 million pounds of beeswax and about 1/2 million dollars worth of package and orchard bees and queens. The value of bees as pollinators

is considered worth eight to ten times the value of all the foregoing apiary products.

To provide sufficient honeybees for agriculture's need for them, beekeeping must be made sufficiently profitable and interesting that a large number of persons will pursue it, either as full-time commercial honey producers or as back yard or side line beekeepers. To this end, improved methods of beekeeping must be worked out, simultaneously losses from disease must be reduced to a minimum, and bees bred and selected for high production, gentleness, hardiness and efficient work in orchard and field.

General plan: Laboratory and field experiments are conducted in cooperation with state and federal agencies. The cooperating states are Arkansas, California, Iowa, Louisiana, Maryland, Oregon, Texas, Utah, Wisconsin, and Wyoming. Disease diagnosis and determinations of arsenic in poisoned bees are service features made available to all.

Examples of progress and current program: The current program includes studies on the resistance of the honeybee to American foulbrood, utilization of pollen by the honeybee colony during winter, tests on the productivity of commercial lines of bees, management of colonies for package bee production, and chemical analysis of nectar and pollens gathered by bees.

Development of resistant strains of honeybees represents a new line of attack on American foulbrood, a nation-wide bee disease which takes an annual toll of thousands of colonies. The only other effective way of control at present involves burning infected colonies, bees and equipment, an expensive and unsatisfactory method. States expend more annually in trying to control this one disease than is expended on all apicultural research, teaching and extension, throughout the country including that done in the United States Department of Agriculture.

Recent work has revealed that strains of honeybees vary in their response to American foulbrood, some showing much more resistance that others. Cooperative work with several agricultural experiment stations has given evidence that the factors having to do with resistance are inherited and that systematic breeding and selection should give strains that will ward off this disease. Progress to the extent of producing strains in which 60 percent of the breeding queen bees show the desired traits has already been attained and a limited amount of experimental stock distributed to state agencies for testing and observation.

In testing strains of bees for productiveness as regards honey crop, differences between strains as great as 100 pounds per colony have been found. Investigation of nectar secretion in plants reveals that the presence of certain cultivated or wild nectar secreting plants can interfere seriously with the pollination of orchard and other fruit crops, this being so when the former plants produce nectar more attractive to bees than is that of the fruit blossoms. Studies on winter food requirements of colonies show that colonies that would otherwise perish during winter could no doubt be saved by providing such colonies adequate provisions of pollen and honey to enable them to carry on winter brood-rearing and, in advance of spring

to replace their winter losses in population. Recent work has demonstrated that as much as 80,000 tons of pollen collected by bees could be made available annually in the United States. The work thus far indicates that pollen is rich in protein, fats and carbohydrates, vitamins and growth promoting hormones.

(r) INSECTS AFFECTING MAN AND ANIMALS

Appropriation Act, 1942, plus $1,485 supplemental for within-grade promotions	$182,985
Second Supplemental National Defense appropriation Act, 1942	5,000
Total available, 1942	187,985
Budget estimate, 1943	190,105
Change from 1942:	
Additional for administrative promotions	+2,120

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Investigations on insects affecting man	$67,850	$73,173	$73,173	- -
2. Investigations on household insects	14,475	14,475	14,475	- -
3. Investigations on insects affecting animals	98,436	98,852	98,852	- -
4. Net cost of within-grade promotions	- -	1,485	3,605	+$2,120
Unobligated balance	739	- -	- -	- -
Total appropriation	181,500	187,985	190,105	+2,120

WORK UNDER THIS APPROPRIATION

Objective: To determine the habits of and to develop control measures for those species of insects which transmit disease, annoy men and livestock, and damage or destroy fabrics and food products, particularly the large stocks stored for use by National Defense agencies.

The problem and its significance: The role played by insects in the transmission of disease to man and animals in the United States is so important as to make it imperative that the habits and life histories of these disease-transmitters be clearly understood so that control measures can be directed at the most vulnerable points in their life cycles. Malaria has always taken a tremendous toll of life, and the loss of efficiency in the Southern States, resulting from malaria, reaches an incalculable figure each year.

In many instances these losses have ceased when the problem of controlling the transmitting mosquito was fully understood. This is only one of a number of human and livestock diseases whose transmission has been traced to insects.

Production of beef, mutton, poultry, and wool, mohair, hides and dairy products vital to national welfare is greatly affected by the depredations of many insect pests such as screwworms, biting flies, cattle grubs, and lice. Horse raising and farm operations are also adversely affected by insects such as horse bots, stable flies, and buffalo gnats.

It is highly important, from the standpoint of National Defense, to safeguard all stocks of food, raw and finished products, blankets, clothing, rugs, and upholstery in factories and warehouses. Many millions of dollars worth of fabrics of all kinds are destroyed by clothes moths, carpet beetles, and silverfish; and great quantities of food products are ruined by flour moths, grain weevils, and flour beetles. These losses are suffered annually by procurement divisions of the Federal Government, warehouses, storekeepers, manufacturers, and householders. The insects involved are cosmopolitan, and the losses caused by them affect every individual. Many of the methods now used in combatting these pests are outmoded and no longer adequate to meet the acute and complex problems of National Defense.

General plan: The work consists primarily of field and laboratory experiments, frequently in cooperation with Federal agencies, State Agricultural Experiment Stations, various control or abatement districts, farmers, livestock associations, physicians, veterinarians, and similar groups.

The work is organized under three financial projects: (1) Insects Affecting Man; (2) Household Insects; and (3) Insects Affecting Animals.

Examples of progress and current program: The following examples of recent accomplishments under this appropriation are cited by projects to show progress in one or more aspects of the broader problems involved.

1. Insects affecting man:

a. Mosquito investigations: A study of encephalitis in the Yakima Valley, Washington, by the Bureau and cooperating public and private agencies resulted in the discovery that 2 strains of the St. Louis virus of encephalitis, and 4 strains of western equine virus occurs in mosquitoes. This is the first time the virus of these diseases has been recovered in mosquitoes in nature. This very important discovery needs to be developed further in order to solve the relationship of insects and this baffling disease.

In the Pacific Northwest, promising new leads have been discovered looking toward mosquito control in irrigated areas.

In a search for more promising larvicides for mosquito control, 121 organic compounds and 8 inorganic materials have been tested. Of these,

one new azo compound and one isothiocyanate were found to be more promising than phenothiazine, the mosquito larvicide most recently developed.

During the year the Bureau has assisted several defense activities by making mosquito surveys in the vicinity of military camps on the Atlantic Seaboard and the Gulf Coast. Working plans and estimates covering mosquito control programs were furnished to Army and Navy contonments, the Civilian Conservation Corps, and the U. S. Public Health Service.

b. Sandflies: In cooperation with the St. Lucie County Sanitary District of Florida, information was obtained that satisfactory control of sandfly breeding could be obtained by diking a large acreage of mangrove and pickleweed marsh and dewatering it with tidegates and pumps.

c. Ticks affecting man: Definite evidence was obtained that populations of the American dog tick, carrier of the eastern strain of the dread Rocky Mountain spotted fever of man, could be consistently, though slowly, reduced by systematically dipping all dogs, the favorite host of the immature ticks. Marked reduction in the number of ticks was also effected by the systematic poisoning of meadow mice upon which the young ticks engorge.

d. Clear Lake gnat investigations: Investigations on the Clear Lake gnat have progressed to the point where two promising lines of attack against them have been developed: (1) especially designed electric light suction fan traps that attract and destroy up to 85 pounds of gnats (about 85 million) in one night; (2) the destruction of egg drifts on the water by especially devised means of burning with gasoline.

e. Secretions of insects and their effects on man: A new healing agent, ammonium allantoinate, was discovered in the secretions of fly maggots and found to be highly effective in stimulating the healing of purulent wounds. A public service patent has been applied for for this agent. Another healing agent, coded as "Extract K", was also isolated in the secretions of fly maggots. Eighty medical products containing synthetic secretions of insects, with an annual sale of over a million dollars, are now made by 25 companies. It has been estimated that about 200,000 cases of non-healing wounds have been treated in the United States with these compounds since their discovery under this project. Entomologists are now investigating additional secretions of blowflies which may be applicable with benefit in cases of osteomyelitis, a common and stubborn bone infection following war wounds.

2. Household insects: A new and useful mothproofing has been discovered and an application has been made for a public patent on this chemical. During the past year the personnel of this project has given extensive time to service work, particularly in defense agencies where large stocks of raw wool, blankets, and leather stocks are concentrated. Samples of materials have been tested to determine their mothproofness for the following organizations: U. S. Maritime Commission, The Federal Trade Commission, Aeronautical Division of the Service Department of the U. S. Army, the

Quartermaster Corps of the Army, and the Marine Corps. Research on mothproofing agents will be speeded up in order to meet the urgent demand for safe materials which will protect all kinds of fabrics against clothes moth attack. Comparable service activities have been carried on in connection with insects affecting foods.

3. Insects affecting animals:

a. Screwworms: Outstanding progress in the field of investigation of this insect was made last year. Of some 200 mixtures prepared and tested under both laboratory and field conditions, 12 proved to be superior to any remedies heretofore developed for the treatment and prevention of screwworm infestations in domestic animals. One of these, known as Formula 62, was selected as being best from the standpoint of practicability, the availability of its ingredients, cost, average performance in the treatment of severe screwworm cases, and its protective value to wounds for the prevention of infestation. This formula, with modifications, has also proved of value in the treatment of fleeceworm cases. The development of Formula 62 has placed in the hands of farmers and ranchmen in screwworm-infested areas an effective weapon in combatting one of the most destructive insect pests of livestock. During the present emergency, with a corresponding increase in beef values this discovery has been the means of saving thousands of dollars to livestock operators.

The results of investigations strongly indicate that it may be possible, in Texas and adjoining States to prevent infestations and practically eradicate screwworms by coordinating certain ranch practices with seasonal and climatic factors which tend to destroy the insect.

b. Cattle grubs: Demand in connection with defense activities for increased production of dairy products and for leather free from serious damage such as caused by the cattle grub, has stimulated stockmen in many States to undertake its control. Investigations of the cattle grub during the past year have yielded an effective and less expensive method of controlling this $50,000,000 pest of American cattle. One of the accomplishments of this project was the discovery of the value of the substitution of 6 ounces of wettable sulfur in lieu of the 2 ounces of soap per gallon of cube wash, as previously recommended for the control of cattle grubs. Another achievement during the past year has been the development of a dust composed of equal parts of cube powder and wettable sulfur for the control of cattle grubs. This powder is especially adapted to small numbers of cattle where dipping would not be practical. The next step is to develop a method whereby the wettable sulfur and cube spray can be applied quickly and effectively to large numbers of cattle by means of a high-pressure sprayer.

c. Fly sprays: A test method was developed whereby accurate comparative assays of toxic or repellent materials can be obtained. Among the toxic materials studied, pyrethrins and rotenone were found to be the most effective in controlling stable and horn flies. The discovery of the increased toxicity imparted to pyrethrum sprays by the addition of sesame oil has practical possibilities especially in view of the danger of the available supply of pyrethrum being curtailed as a result of war conditions.

d. Ticks affecting animals: The investigations on the control of the winter horse tick dealt primarily with insecticides which would kill all stages of the tick and give protection against reinfestation when applied as a wash to the animal. A light mineral oil gave almost 100 percent kill of all stages and afforded some measure of protection against reinfestation; however, this material has some undesirable features. Considerable knowledge was gained on tickicide and adhesive mixtures for application to the ears of range animals to prevent attachment of the Gulf Coast tick.

e. Hornflies: Information on the feeding habits and blood consumption of hornflies was obtained. The loss of blood from a heavily infested herd of 500 animals was calculated to be 7 quarts each day. Two common chemicals were found to be effective in inhibiting the development of hornfly larvae in the droppings of cattle to which these materials had been fed. Public service patents have been requested for these two medicants.

f. Lice, mites, and head bots: Progress was made in these investigations by the discovery that certain organic chemicals, when emulsified, will quickly kill both lice and their eggs when applied to goats in long fleece. The perfecting of a dip which will kill the eggs of lice will be a distinct advance over non-ovicidal insecticides now used. Preliminary field tests have also demonstrated that satisfactory results can be obtained in controlling cattle lice by applying the cube-sulfur dip with either hand-operated or power-operated sprayers.

g. Dog flies: Treatment tests with different materials show that creosote oil diluted with 3 parts of Diesel oil is effective in killing the larvae when it is applied by a high-pressure sprayer to the tidal drifts of bay grasses along the beaches. Cultural practices were developed to eliminate certain breeding places of these insects. Extensive surveys have been made for controlling the dog fly both within and without military reservations, and detailed estimates have been prepared at the request of these defense agencies, the W.P.A. and the State of Florida. With the information so obtained the Bureau assumed technical direction of a cooperative control project which was financially aided by funds appropriated by the U. S. Public Health Service. This was highly successful.

(s) INSECT-PEST SURVEY AND IDENTIFICATION

Appropriation Act, 1942, plus $2,145 supplemental for within-grade promotions	$156,935
Second Supplemental Defense Appropriation Act, 1942	6,000
Total available, 1942	162,935
Budget estimate, 1943	159,150
Change from 1942:	
Net reduction in working funds	-6,000
Additional for administrative promotions	+2,215
Net decrease	-3,785

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Insect-pest survey	$19,559	$19,559	$19,559	- -
2. Identification and classification of insects	135,124	141,231	135,231	-$6,000 (1)
3. Net cost of within-grade promotions	- -	2,145	4,360	+2,215
Unobligated balance	107	- -	- -	- -
Total appropriation	154,790	162,935	159,150	-3,785

DECREASE

(1) The decrease of $6,000 in this item for 1943 is due to readjustments of personnel made in order to continue as far as possible the work on insects especially associated with national defense interests, while preserving also the work on the broader group of insects of great economic importance.

WORK UNDER THIS APPROPRIATION

Due to the fact that the two financial projects under this subappropriation are so different in objective and working plan it seems desirable to discuss them separately rather than under the appropriation title as a single unit. The entire discussion, therefore, will be by projects, as follows:

1. Insect-pest survey:

Objective: To collect detailed information on the occurrence, distribution, ecology, and the relative abundance of insect-pests throughout the United States, and to study these data from month to month and year to year with relation to the several factors that influence abundance.

The problem and its significance: It is planned to have eventually very complete distributional and ecological information on all North American insect-pests, similar information on insects occurring in other parts of the world, and complete lists of the insects affecting any specific plant either in this country or abroad. The results to be obtained from the Survey furnish the necessary foundation for advancement towards entomological forecasting and should throw light on the cause of cyclic and sporadic appearance of insect-pests, the gradual shift of regions of destructive abundance, the barriers to normal dispersal, and the directive influences that determine the paths of insect diffusion.

General plan: This project makes full use of the entomological agencies in the States. It also studies current conditions of insects in foreign countries through the literature and a few collaborators, in order to be informed in advance of the habits, food plants, and natural enemies of

pests that might be introduced into the United States. A monthly Insect-Pest Survey Bulletin gives the current abundance of insect-pests throughout the country and keeps the entomological workers conversant with conditions over the country. By informal arrangements, the United States Insect-Pest Survey is able to report on insect conditions in Canada every month, and to a lesser extent in Mexico, Puerto Rico, and the Hawaiian Islands.

Progress and current program: During the year the literature on foreign insect-pests that are not established in this country has been completely indexed from 1916 to the present time, and during the next fiscal year this work will be completed back to 1913. This is valuable from the standpoint of cyclic factors. During the year the Survey added to the permanent files on the distribution, abundance, and habits of foreign insects 20,800 notes and added 4,450 species not heretofore recorded. The note files on domestic insects have been augmented by the addition of 22,400 notes and 750 species heretofore unrecorded. This brings the grand total of notes to nearly 400,000. The index on specific plants attacked by insects has been augmented by 30 new genera and 75 new species of plants on which there are known insect-pests and during the year an index to foreign plants attacked by insects was inaugurated. This brings the total number of plants on which we have insect records to 2,775. This year, in addition to the issue of the regular monthly bulletins, 10 supplements were issued on special problems.

2. Insect identification:

Objective: Identification of insects and allied organisms for the quarantine, control and research activities of the Bureau of Entomology and Plant Quarantine, the Public Health Service, and also for the benefit of the military and naval establishments and other federal agencies, state agricultural colleges and experiment stations, pest control operators and private individuals of the United States, as well as for foreign institutions and agencies, especially of the Western Hemisphere; and the performance of research in insect classification which must provide the basis for definite and complete identifications.

The problem and its significance: There are many hundreds of thousands of different kinds of insects. Numerous species within any given group resemble each other so closely as to appear identical but have entirely different habits, in consequence of which they demand different kinds of control or regulation. Exact identifications of insects are therefore fundamental to research, control and regulatory activities involving them. Such identifications can only be made by experts from specimens that have been specially prepared for study.

General plan: Practically all the work is performed in Washington, D. C. It consists essentially of (a) service activities, involving insect identification and the furnishing of authoritative information on insect classification, nomenclature, habits, distribution and host relationships; and (b) research in insect classification to provide the basis for accurate

identifications. Individual specialists are occasionally required to spend brief periods in the field to assist workers on large-scale control or regulation projects in identification problems involved; and visits are made to institutions that are important repositories of insect collections for the purpose of studying special material bearing on research that has been undertaken.

Examples of progress and current program: During the past 5 years the number of insect identifications made annually has ranged from 60,117 to 77,856. Manuscripts originating in other agencies and referred to this Division for review involved the verification or correction of scientific names totaling 12,000 to 30,000 annually.

Results of research in insect classification performed in this Division are given in published papers. During the past 5 years the number of manuscripts completed and submitted for publication annually ranged from 32 to 52; and the number of printed pages in papers actually published ranged from 401 to 1,013.

Completed work includes research designed to provide a basis for sound identification and control in such groups as the fruitflies; beetles, known in the larval stage as flat-headed borers, which cause extensive damage to trees; minute moths, the larvae of which feed on the foliage of various plants; the horseflies; scale insects frequently encountered in plant quarantine activities; mites, which are important plant pests; plant lice; and the group of beetles known as raspberry fruitworms. Examples of research projects under way are similar studies in the classification of the blowflies; the fleas; the weevils comprising the complex known as white-fringed beetles, which are important introduced pests in the southeastern states; the botflies, important pests of cattle and domestic animals; weevil larvae; the blood-sucking blackflies, or buffalo gnats; insect parasites of other insects involved in biological-control programs; bark beetles that are pests of forest trees; whiteflies, which are injurious to many different plants and are serious pests in greenhouses; thrips; and leafhoppers that are important plant pests and are involved in the transmission of plant diseases.

(t) FOREIGN PARASITES

Appropriation Act, 1942, plus $480 supplemental for within-grade promotions	$38,480
Budget estimate, 1943	20,775
Change from 1942:	
Net reduction in working funds	-18,000
Additional for administrative promotions	+ 295
Net decrease	-17,705

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Foreign parasite introduction	$37,955	$38,000	$20,000	-$18,000 (1)
2. Net cost of within-grade promotions	- -	480	775	+ 295
Unobligated balance	45	- -	- -	- -
Total appropriation	38,000	38,480	20,775	- 17,705

DECREASE

(1) The decrease in working funds of $18,000 in this item contemplates the discontinuance of parasite collection work in the Far East, the curtailment of similar work in South America and the reduction of operations at the Parasite Receiving Station at Hoboken, New Jersey. These changes will involve the discontinuance of the services of four full-time employees and facilitating expenses.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item by eliminating the following:

> "; and not to exceed $1,100 of the funds appropriated to the Bureau of Entomology and Plant Quarantine for the fiscal year 1940 may be used to reimburse employees assigned to carry out investigations in Europe for expenses incurred in bringing their families to the United States in compliance with official instructions directing them to return with their families to the United States".

The language was included in the 1942 Act to provide for reimbursing employees for unusual expenses which they incurred in bringing their families to the United States at the beginning of the present war. There is no need for the continuation of this language.

WORK UNDER THIS APPROPRIATION

Objective: To bring about the biological control of insect pests by the importation of their parasites from abroad, thus permitting the more economical production of agricultural crops.

The problem and its significance: The great majority of the destructive insect pests attacking agricultural crops in the United States are not native to this country but gained entry from abroad through trade channels. In the countries of origin they are usually not nearly so injurious, often not requiring control measures, and this is due, in many instances, to the parasites that attack them. These parasites did not accompany the pests when they became established in the United States, and consequently the latter were able to increase to destructive levels. Biological control, when successful, is the most economical method, as the first cost is usually the only cost, and treatment annually, or several times each year, as in chemical and mechanical control, is unnecessary.

General plan: To maintain field stations abroad for the study and importation of parasites of crop pests, and a domestic receiving station at which the material is handled under quarantine conditions until released for colonization. Two foreign stations are now in operation, one at Montevideo, Uruguay, handling work throughout South America, and another at Yokohama, Japan. The latter is being closed because of difficulties encountered in conducting work in Japan, and it is planned to undertake investigations in Australia and New Zealand. Shipments of parasites are also obtained through cooperative arrangements with foreign organizations, and in return, shipments of American parasites are forwarded to them. A parasite receiving station is maintained at Hoboken, New Jersey, where parasite material may be received under quarantine conditions, reared under the most favorable conditions, and made available for colonization.

The insects for which natural enemies are sought attack a wide variety of crops. The expenses connected with parasite importation, other than recurring ones of an administrative nature, are provided for from appropriations made for studies on the particular pests.

Examples of progress and current program: The finding of species of parasites of the Comstock mealybug, a pest of apple, in Japan and their importation during the past two years, has resulted in the establishment of the two most important ones, and there is already evidence of a considerable degree of control in orchards in Virginia. The surveys in South America, begun in 1940, have revealed new and important parasites of the cotton boll weevil, pink bollworm, cotton stainers, sugar-cane moth borer, bean beetle and corn earworm, and these are now being imported and colonized. The proposed investigations in Australia and New Zealand are directed mainly towards finding parasites of the sugar-cane moth borer, white-fringed beetle, white grubs, cotton stainers, bean beetle and citrus scale insects.

During 1941 approximately 50 shipments of parasite material, containing nearly half a million parasites, were received from abroad, passed through quarantine and distributed to the domestic field stations.

(u) CONTROL INVESTIGATIONS

Appropriation Act, 1942, plus $695 supplemental for within-grade promotions.....	$73,213
Budget estimate, 1943.....	66,585
Change from 1942:	
Net reduction in working funds...	7,518
Additional for administrative promotions.....	+ 890
Net decrease....	-6,628

Project Statement

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Control Investigations	$72,068	$72,518	$65,000	-$7,518 (1)
2. Net cost of within-grade promotions.....	- -	695	1,585	+ 890
Unobligated balance...	450	- -	- -	- -
Total Appropriation	72,518	73,213	66,585	-6,628

DECREASE

(1) The decrease in working funds of $7,518 in this item for 1943 contemplates a curtailment in activities on the physiology and toxicology of insects, in the development of new insecticides, and a further reduction on the testing of new insecticides and fumigants. This will reduce laboratory work being done at beltsville, Maryland and Sanford, Florida, will result in the dropping of one clerical position in Washington and the curtailment of expenditures for supplies, materials, and equipment.

WORK UNDER THIS APPROPRIATION

Objective: To find more economical and more efficient materials for the control o of insect pests, to develop machinery and methods for the cheaper application of insecticides, and to work out methods of disinfecting commodities under plant quarantine regulations so that they can move freely and safely in commerce.

The problem and its significance: The development of insecticides and insecticidal treatments for crops and other commodities for the destruction of insects is an important phase in the production and storage of plants and plant products and for the treatment of commodities under quarantine regulation so that they can be moved from infested to unifested regions without danger of disseminating the pest.

There is need for new insecticides to take the place of those leaving harmful residues when applied to edible portions of plants or where the basic materials are widely used in Defense work or which are of foreign origin and therefore difficult to obtain, or for important insect pests for which no satisfactory insecticide is now available.

More efficient and economical methods for the application of insecticides and insecticidal treatments are needed to decrease the cost and allow wider application where the margin of profit in crops is narrow.

This problem necessarily relates to much of the research, control and quarantine enforcement work of the Bureau, and may cut across crop and divisional lines. In such cases the work is closely coordinated with that done by other units.

General plan: The work on insecticides is largely laboratory investigations on the physiology of insecticidal action and tests of promising compounds against 10 or 15 insects of economic importance, and tests on crop plants. Work on methods of applying insecticides is both shop and field work.

The development of treatments for commodities subject to Federal and State quarantines is carried out in the laboratory and field in cooperation with other divisions of this Bureau, or with State or private agencies.

Examples of progress and current program: Approximately 2,500 tests were made on 200 or more synthetic compounds as stomach poisons during the year. Eighty-eight of these compounds are new. Of the 1,200 compounds tested in one of our laboratories in the last four years, 24 were effective against all of the 6 to 11 species of insects upon which they were tested. Eighty others were effective against 3 out of 5 insects. Preliminary work has been completed on four of these compounds and they are being tested as insecticides by other Divisions, and work is underway on the promising other compounds.

Work was carried on with Freon (dichloro-difluoromethane) as a carrier and dispersing agent for insecticidal aerosols of pyrethrum. This mixture is non-staining, non-poisonous to human beings, non-inflammable, easily applied, and is effective against certain types of household insects, particularly flies, cockroaches, and mosquitoes. It offers excellent commercial possibilities as it is cheap and convenient to handle. A number of other insecticides are being tested as aerosols alone and in combination.

The discovery that the addition of sesame oil would increase the effectiveness of pyrethrum to houseflies and some other household insects from 2 to 3 times has stimulated efforts to find other activators that will increase the effectiveness of high-priced insecticides.

Methods for applying insecticides in an air-blended mixture from an autogiro were tested with a number of insecticides other than lead arsenate and oil. They were distributed very satisfactorily. Approximately 600 acres of mountainous forest land were treated with air-blended lead arsenate and oil this season in a commercial application for the control of gypsy moth. Cost of application by this method is approximately $6.00 per acre less than the usual method of spraying for this insect. It is planned to continue the experiments with other types of insecticides and on other crops.

A study on the comparative efficiency of five different methods of vaporizing nicotine for greenhouse fumigation was completed. It has been found that the application of nicotine as an aerosol and with the addition of certain activators is much more effective in controlling insect pests. This study is being continued.

Work was completed on developing fumigation treatments with methyl bromide for the oriental fruit moth. Shipments of nursery stock fumigated in the Middle West and shipped to western States amounted to more than $100,000 during the past season. The quantity of nursery stock shipped promises to increase as fumigation facilities are installed at more nurseries.

Work was completed on a method of fumigation of white potatoes for the tuber moth during the last season and applied commercially this fall.

At the request of the Western Plant Board, another method was developed for the fumigation of vetch seed with a dosage of one pound of methyl bromide per 1,000 cubic feet, which reduces the cost of the fumigant one-half, but requires a longer exposure than the previously authorized method.

The completion of these phases of the work allows the taking up of other projects along similar lines, such as the working out of a treatment for the Parlatoria scale, the development of a treatment for the apple root aphid and for elm scale, which are under quarantine regulation. There is a demand by quarantine officers and shippers for work on other projects of a similar nature and they will be taken up as time and funds permit.

In the work on white-fringed beetle two methods were developed for killing all stages of the beetle in soil to a depth of 24 inches and are available as methods of eradication. Two treatments were developed for nursery stock in soil: (1) Vacuum fumigation: and (2) modification of existing dosage schedules for methyl bromide solution. These facilitate the movement of nursery stock. Work is being continued on developing treatments for commodities such as bulbs, white potatoes, sweetpotatoes, and hay, to permit movement from regulated areas; and on treating large-sized soil masses on nursery stock so as to permit the movement of large trees from nurseries now under quarantine or in close proximity to quarantined areas and which may be under regulation in the near future.

(v) INSECTICIDE AND FUNGICIDE INVESTIGATIONS

Appropriation Act, 1942, plus $1115 supplemental for within-grade promotions	$131,115
Budget Estimate, 1943	122,915
Change from 1942:	
Net reduction in working funds	-10,000
Additional for administrative promotions	+1,800
Net decrease	- 82,000

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Chemical investigations on insecticides	$124,596	$130,000	$120,000	-$10,000(1)
2. Net cost of within-grade promotions	- -	1,115	2,915	+ 1,800
Unobligated balance	404	- -	- -	- -
Total appropriation	125,000	131,115	122,915	-8,200

DECREASE

(1) The decrease in working funds of $10,000 in this item contemplates the discontinuance of library research work on insecticides of vegetable origin and the discontinuance of the services of a chemist engaged in investigations on accessory materials for use with insecticides. These activities are now being carried on at the Beltsville, Maryland station, the work of which will be curtailed to that extent.

WORK UNDER THIS APPROPRIATION

Objective: To improve the chemical materials employed in controlling insect pests and to develop new ones in order to increase the return to the farm by providing better and cheaper materials for chemical control of agricultural pests, thus reducing the cost of agricultural production and improving its quality.

The problem and its significance: Insecticides are necessary for the control of the many kinds of destructive insects in the United States. The damage caused by these insects is conservatively estimated to be $2,000,000,000 yearly, a loss which would be much greater if insecticides were not used.

The retail value of insecticides and fungicides sold annually in the United States is estimated to lie between 100 and 200 million dollars. There is urgent need for insecticides that are cheaper and more effective as well as non-toxic to man and the higher animals.

The defense program has created an acute shortage of many of the materials used in making insecticides and fungicides, especially antimony, copper, zinc, mercury, chlorine, cresylic acid, and formaldehyde. Intensive research is imperative to find substitutes for these materials.

General plan: The work consists of laboratory and field experiments carried out in close cooperation with other research divisions of the Bureau of Entomology and Plant Quarantine.

Examples of progress and current program: New organic compounds have been synthesized and some of these appear promising as substitutes for imported pyrethrum flowers and derris root, supplies of which may be greatly curtailed or entirely cut off if war in the Pacific develops.

New fumigants to take the place of the chlorinated products, carbon tetrachloride and ethylene dichloride, which are scarce because of a shortage of chlorine, have given promising results in tests against weevils in grain.

The Chinese plant, Tripterygium, which grows well in the United States, was found to contain the most toxic material yet tested against codling moth larvae.

An entirely new method of distributing insecticides has been developed. This consists in dissolving the toxic material in a gas, liquefied under pressure in a cylinder. Upon releasing the pressure, the solvent vaporizes, leaving the insecticide in finely divided form suspended in air.

Organic compounds of domestic origin have been found to be acceptable substitutes for the sesamin from sesame oil, which is imported from British India. Sesamin and related compounds when added to pyrethrum extracts greatly enhance their value. This discovery makes possible the substitution of a domestic plant constituent in part for pyrethrum flowers, of which from 15 to 20 million pounds are imported annually.

The insecticidal alkaloid nornicotine, formerly a laboratory curiosity, was found in a Maryland tobacco, a discovery that can be utilized commercially.

New methods of analysis that are more accurate and less time-consuming than former methods were developed for nicotine in tobacco, the pyrethrins in pyrethrum flowers, geraniol, sodium arsenite, tartar emetic and many other materials. These methods will not only aid in the handling of the large number of analyses made for the several divisions of this Bureau, but will help safeguard the interests of the farmer and householder in securing insecticides of high quality.

Work was done for the Army and Navy in analyzing products designed to combat termites, flies, mosquitoes, roaches and other insects.

(w) TRANSIT INSPECTION

Appropriation Act, 1942, plus $660 supplemental for within-grade promotions.....	$44,719
Budget estimate, 1943.....	41,235
Change from 1942:	
Net reduction in working fund.....	- 4,059
Additional for administrative promotions....	+575
Net decrease.....	- 3,484

Project Statement

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Transit inspection.....	$43,986	$44,059	$40,000	-$4,059(1)
2. Net cost of within-grade promotions.....	- -	660	1,235	+ 575
Unobligated balance.....	73	- -	- -	- -
Total appropriation	44,059	44,719	41,235	-3,484

DECREASE

(1) The decrease in working funds of $4,059 in this item for 1943 contemplates the discontinuance of transit inspection activities at St. Louis, Mo., and St. Paul, Minn. The services of 2 professional employees will be discontinued.

WORK UNDER THIS APPROPRIATION

Objective: To inspect in transit or otherwise plants, plant products and other materials or articles regulated by Federal plant quarantine, and intercept and dispose of those being transported in violation thereof, to assure compliance of quarantine issued to protect uninfested sections from plant pests injurious to agriculture.

The problem and its significance: Various quarantines and regulatory orders are issued by the Department to prevent the spread of injurous pests such as the white-fringed beetle, the pink bollworm of cotton, Dutch elm disease, white pine blister rust, Japanese beetle, and gypsy moth. The effective enforcement of these quarantines is of great importance and requires that inspections be made outside the regulated areas to supplement and serve as an additional line of defense to the inspection and certification work done there. Approximately 95% of interstate shipments by common carrier is systematically routed through established and strategically located transportation centers. Inspectors located at

such points, through cooperation of employees of the common carrier and state plant pest control officials, can examine and inspect the majority of the shipments containing restricted material. Transit inspection is thus an important second line of quarantine enforcement, supplementing the work done by units within the regulated areas to inspect and certify plants, plant products, and other articles required by the quarantines.

General plan: During the fiscal year 1941, inspection was conducted at 22 transportation centers, 8 of which were operated on a seasonal basis. The inspection force consisted of 19 permanent and 20 part-time inspectors, and, in addition, 11 collaborators were assigned to assist in the work by the cooperating states. Material assistance is given inspectors by the cooperation of several thousand mail, express, and freight employees who watch for shipments of restricted materials, segregate and hold them for examination by the inspectors. State cooperative contributions for the fiscal year 1942 were $20,900.

Assignments are frequently changed, new stations opened or old ones discontinued to meet the inspection requirements occasioned by changes in quarantines or in regulated areas.

Examples of progress and current program: During 1920, the first year transit inspection was conducted, 12 out of each 1,000 shipments inspected were found to be moving in violation of quarantine regulations, while in 1941 this ratio was only approximately 2 per 1,000 shipments. This illustrates the effectiveness of transit inspection in educating the public to quarantine requirements which is considered one of the most important phases of the work. Out of a total of nearly 1,500,000 shipments inspected during the fiscal year 1941, 2,839 violations of the 9 Federal domestic plant quarantines were intercepted, with destinations in 48 states, the District of Columbia, and Canada. In addition, 1,640 shipments were found to be moving in apparent violation of state pest control and nursery certification requirements.

During recent years transit inspectors have intercepted a number of shipments in transit infested or infected with such injurious pests as gypsy moth, Japanese beetle, the European corn borer and white pine blister rust. If such shipments had been allowed to proceed to their destinations, it is probable that new centers of infestation or infection might have become established.

(x) FOREIGN PLANT QUARANTINES

Appropriation Act, 1942, plus $5,870 supplemental for within-grade promotions	$695,870
Second supplemental National Defense Appropriation Act, 1942	11,500
Total available, 1942	707,370
Budget estimate, 1943	731,065
Change from 1942:	
Increase in working funds	+14,765
Additional for administrative promotions	+ 8,930
Total increase	23,695

PROJECT STATEMENT

Project	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Import and permit service for issuance of permits for the importation of plants and plant products to comply with plant quarantines	$57,883	$58,348	$58,348	- -
2. Inspection at ports of entry of plants and plant products regulated by plant quarantines.	637,849	643,152	657,917	+$14,765(1)
3. Net cost of within-grade promotions	- -	5,870	14,800	+ 8,930
Unobligated balance	2,268	- -	- -	- -
Total appropriation	698,000	707,370	731,065	+23,695

INCREASE

(1) An increase in working funds of $14,765 in this item for 1943 is requested for the project " Inspection at Ports of Entry of Plants and Plant Products Regulated by Plant Quarantines".

Objective: (a) To provide for the continuance during the full fiscal year 1943 of special activities carried on during the last eight months of the fiscal year 1942 under special supplemental appropriation for National Defense. (b) To provide for increasing inspection at eastern ports to meet situations arising from the international situation.

The problem and its significance: (a) Both the volume and complication of port inspection work in certain areas has been greatly increased by the direct impact of the National Defense program. This has been particularly true in Hawaii, Puerto Rico and at the ports of New York and Norfolk on the Mainland, where there have been exceedingly heavy demands for inspection of Army transports, Naval vessels, Army and Navy airplanes, and parcel post mailed in the insular possessions. This work assumed such proportions

during the current fiscal year as to bring about a supplemental appropriation of $11,500 and it will be necessary to continue the work on at least the same scale throughout the fiscal year 1943. (b) While the problems of regular port inspection work have become increasingly acute, there are developments resulting indirectly from the international situation which will materially increase the work in the fiscal year 1943. Even in ports which are not Naval bases there are frequent unannounced arrivals of Army and Navy vessels and further complications are caused by the necessity of inspecting large numbers of vessels arriving in convoys from abroad and also the increased inspection load on certain plant products imported from foreign countries required for National Defense purposes. To transfer the necessary number of inspectors from other locations to the ports where this situation is most urgent would weaken the essential plant quarantine protection against the introduction into this country of injurious plant pests.

Plan of work and financial requirements: (a) Additional employees placed at points which will be indicated to the committee at the hearing during the last eight months of fiscal year 1942 will be continued throughout the fiscal year 1943. There are seven such inspectors. (b) One additional inspector will be added to the staff at another point and three at another point. It will also be necessary to purchase a certain amount of supplies and materials incident to the increased inspection work.

WORK UNDER THIS APPROPRIATION

Objective: To protect agriculture by administering plant quarantines and regulatory orders, issued under the Insect Pest Act of 1905 and the Plant Quarantine Act of 1912, as amended, to prevent the entry of insect pests and plant diseases from foreign countries, Puerto Rico and Hawaii and control and safeguard the entry of plants, plant products and other articles which may carry such pests.

The problem and its significance: It has been estimated that the average annual loss from introduced foreign insect pests of plants and plant products in the United States amounts to $1,500,000,000. Now more than ever before it is imperative that agriculture be protected from plant pests in order that the United States may supply not only its own needs, but the needs of the democracies in the current war effort. In order that there may be an adequate production of plants and plant products for food, construction, and other purposes during the period of war, it is vital that every effort be made to prevent the introduction and establishment of additional foreign plant pests which could impede the present production of such supplies, or in the post-war adjustment period seriously jeopardize and handicap agriculture as a whole.

World commerce has been disrupted by the war, causing some current decreases in commercial maritime communication with the Eastern Hemisphere and increases in commerce in the Western Hemisphere. The war has brought about an increase in the problems of foreign plant quarantine

enforcement through the substitution, for normal commercial commerce, of abnormal lend-lease commerce and the movement of the ships and aircraft, troops, and supplies, of the armed forces. The exigencies of the latter movements create a set of problems peculiar to the situation which necessitate intensive supervision of the personnel and work, and constant adjustment of emphasis to meet the kaleidoscopic changes occurring from day to day.

Receipts: During the fiscal year 1941 receipts of $16,000 resulted from the fee of $4.00 a car charged for fumigating railroad cars entering this country from Mexico. This fumigation is required as a safeguard against the introduction of insects attacking cotton. Estimated receipts from this source in 1942 are $16,500.

General plan: Under the Plant Quarantine Act most kinds of plant propagating materials, fruits, vegetables, cotton lint and related products, cereals, etc., may be imported only under permit, subject to inspection, and in some instances supervised disinfection, sterilization, etc., at the ports of entry. Permits to import serve to bring the importations to the attention of the plant quarantine inspectors who are located in the principal maritime, and Canadian and Mexican Border ports of entry who, in cooperation with Customs, inspect vessels, trains, and aircraft from foreign countries, their stores and passengers' and crews' quarters, passengers' baggage, cargo, and with the further cooperation of the Post Office Department, mail, for the presence of injurious plant pests or the means of carrying such pests. In Hawaii and Puerto Rico the movement of cert ain plants and plant products to the mainland is supervised, and certain products are treated under supervision, for the prevention of the movement of injurious pests with these products. The work is organized under two general headings, Import and Permit, and Port Inspection, and is conducted at a cost of less than 1/2000 of the estimated annual loss from introduced insect pests alone.

During the fiscal year 1942, cooperation from States and Territories amounted to $137,325, the major contribution being from California and Florida.

Examples of progress and current programs:

Import and Permit: Emphasis in recent years has been on the simplification of permit procedures to facilitate the prompt inspection of importations by bringing each entry promptly to the attention of the inspectors. There is a continual review of the plant quarantines and the supplemental regulations in order that they may be revised to meet changing world conditions that directly affect the risk of introducing injurious insects and plant diseases into the United States. Concurrently, with the purely routine procedures of permit issuance, there is the identification of plant diseases and insect pests intercepted in the ports of entry on foreign plant material actually brought to this country, and the indexing, filing, and analysis of the pest risk information accumulated through these

interceptions, supplemented by a limited amount of similar information gleamed from world literature. This information is then utilized as a basis for decisions on requests for permits for certain importations, for drafting instructions to inspectors concerning specific importations, and for training the inspectors in order that the Bureau may do more and better work with the limited personnel available. The in-service training features of the work which have had considerable emphasis in the past few years are now bearing fruit because of the additional demands made upon the inspection personnel due to national defense activities.

Although there has been a decrease in normal foreign commerce with certain countries, new problems are constantly arising in connection with increasing commerce with other countries occasioned by the dislocations due to the war. This necessitates a continual study of the possibilities for safeguarding against pest risk in connection with the importing problems thus presented, which entails considerable correspondence with the public and the inspection personnel concerning the regulations and the provisions for importation thereunder. It must be emphasized that shipments brought to this country without previous authorization may involve considerable delay and unanticipated expenditures, with possible losses to the importer, and the preliminary arrangements of permits and correspondence not only assist the importer in preventing such losses, but have the more important functions of arranging for entry under safeguards against unusual pest risk which these importations so often present.

Port inspection: Since the inception of the work in 1913 the inspection force has not been adequate to make desired thorough inspection and emphasis during recent years has been placed more and more on increasing the efficiency of the existing personnel through training and improvement of inspection techniques and the utilization where practicable of advanced treating procedures.

The exigencies of the current war effort have superimposed upon the normal problems of safeguarding foreign arrivals against the introduction of insect pests, additional problems more than sufficient to offset any reduction in normal foreign commerce. In view of the efforts being made to cooperate fully with the armed forces in the inspection of surface and aircraft arriving from foreign countries, such craft arriving at mainland ports from Hawaii and Puerto Rico, and also arriving at Hawaii from the mainland, supplemental appropriations have been made to provide for the employment of additional personnel at the ports under this appropriation and the appropriation for Certification of Exports.

The arrival of vessels in ballast from England creates a problem, lest this country also become the haven for injurious insects which may be carried in such ballast. The arrival of vessels in large convoys rather than in the normal steady flow creates serious personnel problems because of the lack of inspectors sufficient to handle the work at such peak periods. Millions of bushels of wheat from Australia, prohibited importation on account of the flag smut disease, is temporarily stored and transshipped at American ports, under safeguards, to England. Unusually large quantities

of cotton fiber are imported subject to supervised disinfection. Increased traffic with Mexico occasioned by defense activities requires the inspection of many additional freight cars and the fumigation of increased numbers of cars contaminated with cottonseed to prevent the further introduction of the pink bollworm into the cotton growing areas of the country. Vessels of friendly nations arriving for repairs present problems with respect to stores, such as one warship with 400 cases of citrus fruit from a country where Mediterranean fruit-fly occurs. The greatly increased numbers of commercial airplanes arriving from foreign countries, and from Hawaii and Puerto Rico, at mainland ports presents the problem of having inspectors available for assignment to these arrivals.

(y) CERTIFICATION OF EXPORTS

Appropriation Act, 1942, plus $225 supplemental for within-grade promotions.....	$32,087
Budget estimate, 1943.....	30,710
Change from 1942:	
Net reduction in working funds.....	1,862
Additional for administrative promotions.....	+ 485
Net decrease.....	- 1,377

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Certification of exports....	$31,646	$31,862	$30,000	-$1,862(1)
2. Net cost of within-grade promotions.....	- -	225	710	485
Unobligated balance.....	216	- -	- -	- -
Total appropriation.....	31,862	32,087	30,710	- 1,377

DECREASE

(1) The decrease in working funds of $1,862 in this item for 1943 contemplates the curtailment of activities at New York. It is anticipated that at least a considerable part of the work, however, can be carried on by port inspectors operating under the appropriation for Foreign Plant Quarantines.

WORK UNDER THIS APPROPRIATION

Objective: To inspect and certify shipments of plants and plant products offered for export to meet the sanitary requirements with respect to insect pests and plant diseases of the foreign countries of destination, thus enabling exportors to comply with conditions of importation into such countries without which the importations would be prohibited.

The problem and its significance: In recent years many foreign countries have imposed additional requirements governing importations of plants and plant products and have increased their enforcement of existing sanitary requirements. The growers and exporters of this country have faced loss of markets without strict inspection and adequate certification of their exports of plant materials. Under the provisions which have been made annually in the Appropriation Act of the Department of Agriculture commencing in 1927, this activity has enabled the growers and exporters to meet these requirements and save their markets if the conditions of their shipments warranted the required certification. With the closing of markets in war-ridden Europe, exporters are seeking new outlets for their surpluses and this service now becomes an even greater aid to them in shipping products which will satisfy the entry restrictions of the countries in which the new markets are located.

Receipts: Receipts in the amount of $3,925 were collected during the fiscal year 1941. The $1.00 fee charged for each certificate issued was not collected from agencies of the Federal government.

General plan: This work is performed largely in conjunction with port inspection activities under the appropriation for Foreign Plant Quarantines, since export certificates may be issued at any of the various ports where plant quarantine inspectors are stationed. The work is so organized that State-Federal inspection personnel operating under the Apple and Pear Export Act, enforced by the Agricultural Marketing Service, assist in the inspection at shipping point of apples and pears in order that they may also meet the sanitary requirements of the countries of destination. Such sanitary shipping-point inspection is supervised by designated employees of this Bureau during the shipping season.

Examples of progress and current program: Most of the countries in which the United States has leased defense bases maintain and enforce plant quarantine import restrictions. The War and Navy Departments have evidenced a desire to observe the regulations of those countries when shipping food and other supplies to those bases. To meet the emergency demands for the inspection of these supplies at the port of embarkation, special emphasis has been placed on this phase of the work and some supplementary funds have been made available for the employment of additional personnel under this appropriation and the appropriation for Foreign Plant Quarantines.

Studies are being made with a view to perfecting a procedure whereby State nursery inspection agencies, if they so desire, may cooperate when requested to do so by shippers within those States in making the inspections necessary for Federal certification of shipments which such Federal certification is required by the foreign country of destination.

With the outbreak of the war in Europe, there was a marked decline in export shipments, particularly in certain fruits. New foreign markets are being found and present indications point toward a large increase in

the number of shipments exported in 1942 as compared with 1941, which will consist of nearly twice the number of containers.

(z) CONTROL OF EMERGENCY OUTBREAKS OF INSECT PESTS AND PLANT DISEASES

During the fiscal years 1941 and 1942 an appropriation of $2,225,000 was made available as follows:

First Deficiency Act, 1941, approved April 1, 1941.....$2,225,000

Of the amount available, $274,000 was obligated during the fiscal year 1941, leaving a balance of $1,951,000 available for obligation during the fiscal year 1942.

The Budget for 1943 includes no request for an appropriation under this item. It is expected, however, that an estimate of funds required to carry out the purpose of the authorizing legislation for the season of 1942 will be submitted for consideration in connection with a deficiency appropriation act. It is generally recognized that information that may be assembled regarding the status of plant pests which may occur in emergency outbreaks, such as grasshoppers, Mormon crickets, chinch bugs, etc., during the season when they are active gives a reasonably satisfactory basis on which an estimate of funds may be made. Such information is not available until late in the fall and considerably after the time when regular estimates are prepared. It is also recognized that plans and operations for the control of incipient and emergency outbreaks of plant pests have to be made and carried out on the basis of crop rather than fiscal years. For effective work, funds that are provided should, therefore, be available early in the calendar year.

WORK UNDER THIS APPROPRIATION

Work under this appropriation is conducted on the basis of a crop season rather than a fiscal year. It is therefore not practicable to report on the work done under this item on the basis of a fiscal year. The following briefly summarized the activities which have been conducted with funds made available under the authorization for the control of incipient and emergency outbreaks of plant pests. None of the appropriations made under this authorization have been carried in regular Acts providing funds for the Department.

Public Resolution No. 20, 75th Congress, authorized an appropriation of $2,000,000 for the control of incipient and emergency outbreaks of insects pests and plant diseases, including grasshoppers, Mormon crickets, and chinchbugs. It also authorized that the funds appropriated should remain available until expended and the appropriation of such additional sums as might be necessary to replenish the fund to its original amount at the beginning of each fiscal year.

Public Resolution No. 91 (75th Congress) amended this legislation by removing the limitation of $2,000,000 and authorizing the appropriation of such amounts as might be necessary. Nine appropriations have been made under these authorizations, as follows: Two of $1,000,000 each, the first

by Public Resolution No. 26, approved April 27, 1937, and the second by Public Resolution No. 55, approved July 17, 1937; one of $2,000,000 by Public Resolution No. 81, approved March 2, 1938; one of $700,000 by the Second Deficiency Act, fiscal year, 1938; one of $3,000,000 by the First Deficiency Act, fiscal year 1939; one of $1750,000 by Public Resolution No 22, approved June 13, 1939; one of $2,500,000 by the First Deficiency Act, fiscal year 1940; one of $800,000 by the Second Deficiency Act for the same year; and one of $2,225,000 by the First Deficiency Appropriation Act, 1941. Of these appropriations all but the last one have expired; this remains available until June 30, 1942.

The great part of the funds provided by these appropriations have been used to enable the Department to cooperate with States in combating widespread outbreaks of grasshoppers. The funds have, however, made it possible to take active measures on a large scale against a newly established pest, the white-fringed beetle, as well as against the Mormon cricket. Also, from year to year, work has been done against other pests, which, although less widespread, are nevertheless serious threats to important agricultural commodities.

During the 1941 field season, control activities were carried on against the pear psylla, the chinch bug, the mole cricket, the sugar cane mite, screwworms, the scale insect Parlatoria Chinensis and the Hall scale.

SUPPLEMENTAL FUNDS
(Complete bureau statement)

Direct Allotments

Projects	Allotments 1941	Estimated allotments, 1942	Estimated allotments, 1943
Special Research Fund, Department of Agriculture:			
Digestion by leaf-eating insects.....	$8,000	- -	- -
Effect of artificial control practices on natural enemies of insect pests.....	16,500	15,700	15,700
Within-grade promotions, net cost	- -	95	- -
Total, Special Research Fund.....	24,500	15,795	15,700
Allotment: Regular Item for White Pine Blister Rust Control:			
Planning, coordination, and technical direction of blister rust control.....	390,000	390,000	390,000
Blister rust quarantine enforcement.....	10,000	10,000	10,000
Cooperative control of blister rust on State and private forests.....	- -	83,332	355,000
Within-grade promotions,-Net Cost	- -	7,560	- -
Total, White pine blister rust control.....	400,000	490,892	755,000
Emergency Relief Appropriation Act:			
Barberry eradication.....	768,000	404,999	- -
Eradication of the Dutch elm disease.....	1,668,874	841,000	- -
White pine blister rust control.....	1,092,189	566,054	- -
Control and prevention of spread of gypsy moth.....	762,000	329,000	- -
Peach mosaic control.....	154,480	58,297	- -
Phony-peach disease control.....	163,520	80,000	- -
Citrus canker eradication.....	75,000	22,000	- -
Wild cotton eradication.....	54,600	22,000	- -
General administrative expenses.....	178,150	84,903	- -
Total Emergency Relief Appropriation Acts.....	4,916,813	2,408,253	- -

Projects	1941	1942	1943
Removal and Reestablishment of Arlington Farm (Entomology and Plant Quarantine:.....	82,000 *	- -	- -
Public Works Administration, Act of 1938 (Allotment to Agriculture) Entomology and Plant Quarantine...	1,167	- -	- -
Working Fund, Agriculture Entomology and Plant Quarantine (Advance from Commodity Credit Cooporation Capital Fund).....	6,000	16,000	- -
Total Supplemental funds (direct allotments)	5,430,480	2,930,940	770,700

* Available until expended

PASSENGER CARRYING VEHICLES

The authorization for the purchase of passenger-carrying vehicles for the Bureau of Entomology and Plant Quarantine provides for a decrease in member of cars estimated to be purchased from 62 in the fiscal year 1942 to 45 in the fiscal year 1943. The 45 carsto be purchased in the fiscal year 1943 will permit the replacement of this number of vehicles, at an estimated net cost of $28,190. No new vehicles other than replacements are estimated for in 1943.

The estimated cost for maintenance, repair and operation for all cars (287) for 1943 is $67,465; a reduction of $4,285 from the authorized $71,750 for 287 cars in 1942.

Of the 45 old cars to be turned in, 38 are of 1938 or earlier model. The average mileage of the machines to be turned in was in excess of 47,000 miles on August 1, 1941, and of course, additional mileage will be added before the cars are actually exchanged.

WHITE PINE BLISTER RUST CONTROL

Appropriation Act, 1942, plus $7,560 supplemental for within-grade promotions	$1,291,560
Budget estimate, 1943	1,974,000
Change from 1942:	
Increase in working funds	+ 690,000
Decrease for within-grade promotions.	- 7,560
Net increase	+ 682,440

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase
1. Planning, coordination, and technical direction of blister rust control through the United States (Bureau of Entomology and Plant Quarantine)	$387,895	$390,000	$390,000	- -
2. Blister rust quarantine enforcement (Bureau of Entomology and Plant Quarantine).	9,952	10,000	10,000	- -
3. Blister rust control operations on the national forests (Forest Service)	643,800	685,668	1,044,000	+$358,332(1)
4. Blister rust control operations on lands under jurisdiction of Interior Department (Department of Interior)	- -	115,000	175,000	+ 60,000(2)
5. Cooperative control of blister rust on State and private forests (Bureau of Entomology and Plant Quarantine)	- -	83,332	355,000	+271,668(3)
6. Net cost of within-grade promotions	- -	7,560	- -	- 7,560
Unobligated balance	2,353	- -	- -	- -
Total appropriation	1,044,000	1,291,560	1,974,000	+ 682,440

INCREASES OR DECREASES

The white pine blister rust is a seriously destructive disease, threatening to eventually kill all fine-needled pines in the United States, unless adequate control measures are taken. The source and nature of the disease are known, and methods developed for its control are fully effective. The Budget increases are necessary to meet the needs of the blister rust control problem on lands administered by several of the agencies cooperating in the unified and coordinated control program. The white pine forests of the United States are publicly and

privately owned. They are administered by several Federal and State agencies and by private owners. These forests are intermingled particularly in the West and all of them are subject to attack by blister rust. The spread and destructiveness of the rust in forest areas is influenced by the same climatic, pathological, and host-plant relationships. When these factors combine to form favorable infection conditions, the rust invades new areas and causes additional pine infection and increasing damage in those areas where it is already established. The rust is particularly destructive to young growth which is the basis of future crops. Its attack continues unceasingly until interrupted by the eradication of the rust-spreading currants and gooseberries in white pine areas. Control of blister rust in the extensive forest areas affected by this disease requires continuous and coordinated application of measures for the eradication of currants and gooseberries on white pine lands in both public and private ownership, a piece of work which has been greatly curtailed as a result of drastic reductions in available CCC and other relief labor.

The increase of $690,000 in working funds in this item for 1943 consists of:

(1) An increase of $358,332 for blister rust control operations on the national forests, in order to prevent the loss of thousands of acres of valuable young stands of western white and sugar pine that cannot otherwise be protected because of reductions in CCC and relief labor.

Objective: To control white-pine blister rust by completing initial *Ribes* (currant and gooseberry) eradication on national forest lands when such control work is necessary to protect commercially valuable stands of white pines; to follow up initial control work with second or subsequent workings needed to remove *Ribes* which have come in since initial treatment.

The problem: The imported white pine blister rust - which kills native American species of white pines - has spread to most sections of the country where white pines are of commercial importance. In the western white pine region (the inland Empire) and in the sugar pine region (California and southern Oregon) it is a very serious threat to the continued productivity of the national forests. The Bureau of Entomology and Plant Quarantine has developed measures for the control of the disease, and is responsible for control in State and private timberlands. The program of control on the national forests is thoroughly integrated with that of the Bureau of Entomology and Plant Quarantine. Close field cooperation is maintained between the two agencies in surveys and planning, as well as in actual control operations.

Control is effected by eradicating *Ribes* bushes within and adjacent to white pine stands. Most of the work is done by hand pulling the bushes, although chemical and mechanical eradication are possible in some situations. Camps must be maintained for the large number of laborers required for this work, much of which is done in steep, rugged, inaccessible areas.

In the eastern and central States most of the control work in the national forests is being carried out by the CCC, but extensive portions of the control area in western national forests are so rugged and remote that CCC camps cannot be established and used for the control work. It is planned to continue to utilize the CCC and relief agencies to the utmost possible extent, but relief

labor in these thinly populated areas is too scarce to do the job in time. The rapid spread of infection in Idaho, and from Oregon into California, necessitates a type of program which those relief agencies cannot provide, if the areas not yet initially worked are to be protected from disaster.

Significance: Western white pine is the most valuable component of the mixed timber stands in the Inland Empire (eastern Washington, northern Idaho, and western Montana), and the same statement applies to sugar pine in its natural range in California and Oregon. Both regions are highly important as sources of commercial timber supplies for the Nation. The lumber industry is the backbone of local economy in the Inland Empire States and in the timbered regions of California and Oregon. Without the highly valuable western white and sugar pines, commercial timber operations - and therefore employment of thousands of workers in the woods and in mills - would be economically impossible on the present scale. The National Forests - managed to supply a sustained yield of timber - must be protected from this imported disease in order to safeguard present and future timber supplies and labor providing potentialities.

2,600,000 acres of National Forest land in the Inland Empire and the California-Oregon sugar pine type must be protected from the disease. The disease is becoming more widespread each year on unprotected areas, and cumulatively increasing damage may be expected. One working is not enough, since new Ribes plants seed in following eradication. Additional, subsequent eradication treatment must be made on parts of the control areas at intervals to insure control. The disease is spreading so rapidly that studies clearly show that the job on the National Forests must be completed within six years. Very grave losses of future crops of white pines are inevitable unless this is accomplished. Present status of the control program is:

	Control zone (acres	Treated initially (acres)	No initial treatment (acres)	Treated second or third time (acres)
Western White Pine	1,386,000*	1,010,000	376,000*	188,000
Sugar Pine Region	1,214,000	339,000	875,000	165,000
Total	2,600,000	1,349,000	1,251,000	353,000

* Includes 43,958 acres of mature stands on which control is deferred until after cutting. This acreage is omitted in the table entitled "Blister Rust Program on National Forest Lands, F.Y. 1940".

Thus, 1,251,000 acres - nearly half of the total area - has not yet been given initial treatment. The estimated remaining job of second and third workings amounts to 2,534,000 acres.

Plan of work: Blister rust control measures developed by the Bureau of Entomology and Plant Quarantine are used by the Forest Service on the National Forests. Close contact is maintained with the Bureau in planning and

accomplishing the National Forest program. The work consists of (1) surveying and mapping the areas where control work is necessary because of the occurrence of Ribes species in and near stands of susceptible white pines on areas of such site quality and accessibility that control work is justified because of present or future timber values, (2) systematic elimination of all Ribes plants within and adjacent to (usually within 900 feet of) control areas, (3) checking the results to make sure that adequate control has been accomplished, and (4) reexaminations followed by repeat eradication of Ribes where needed. Thus, by eliminating the alternate host, the disease can be effectually controlled.

The currant and gooseberry bushes are pulled by laborers working in organized crews. Most of the remaining work is in rugged mountainous country, relatively inaccessible. Laborers must be housed in camps. Hours of labor, travel restrictions, and remoteness of the projects from centers of population make it impossible to accomplish all of the needed work by the use of emergency funds.

Financial requirements: About 84 percent of the requested increase will be used for wages and subsistence of temporary laborers. Tools, equipment, and salary and expense of a limited number of permanent employees will also be required. This itemization follows:

Personnel (field)		Other obligations	
Permanent:		Supplies and Materials	$39,000
1 P-3 Assoc. Pathologist	$3,200	Communication service	1,512
1 P-1 Jr. Forester	2,000	Travel	4,000
1 CAF-3 Clerk	1,620	Transportation of things	1,000
Total Permanent	6,820	Equipment	6,000
Temporary labor	300,000		$51,512
	$306,820		

Total increase $358,332

Of this increase, about $225,000 is expected to be allotted during the fiscal year 1943 to the Inland Empire region of Idaho, eastern Washington, and Montana for the initial protection or reworking of from 45,000 to 55,000 acres which could not otherwise be reached in the Kaniksu, Coeur d'Alene, St. Joe, Clearwater, Kootenai, and Cabinet National Forests; and the balance of $133,332 to cover from 33,000 to 38,000 acres in Sugar Pine region of Oregon and California, largely for use in the Sierra, Stanislaus, Eldorado, Plumas, Lassen, Klamath, Rogue River, Umpqua, and Siskiyou National Forests.

The rate of spread of blister rust indicates that initial eradication will need to be finished within the next two or three years on those western white pine forest areas of the Inland Empire which bear young stands, if we are to prevent them from being lost from blister rust. In California it will probably take about 6 years more for the blister rust to spread southward throughout the Sierra Nevada region. The work plans in the National Forests are based on completing initial eradication within these periods and continuing with the necessary rework with the hope of placing the

western white and sugar pine of both regions on a low-cost maintenance basis by 1950. Allotments from emergency relief appropriation acts to the extent of about recent levels will be needed, in addition to the estimate provided herein, if this purpose is to be accomplished.

(2) An increase of $60,000 under the project "Blister rust control operations on lands under jurisdiction of Interior Department" including:

(a) An increase of $35,000 is requested for Ribes eradication on national parks and adjacent lands endangering national parks, particularly for the protection of valuable white pine stands in Glacier and Sequoia National Parks. This work was started with CCC labor but cannot be continued because of drastic reduction in CCC camps.

Objective: To control white pine blister rust by completing initial Ribes (currant and gooseberry) eradication on national park lands when such control work is necessary to protect white pines that have aesthetic or recreational value; to follow up initial work with second or subsequent workings needed to remove Ribes that have come in since initial treatment.

The problem and its significance: There are approximately 359,470 acres of land in 13 national parks on which five-needle pines occur. These pines are valuable and most important for recreational purposes. As national parks are established on areas of surpassing aesthetic and recreational value, the maintenance of the forest cover is essential for the protection of such values. If these pines are to be protected the Ribes must be eradicated; otherwise the pines will be killed and during the process of killing the trees will be badly disfigured with cankers and dead branches, thereby ruining such areas for park purposes.

In the national park system blister rust control underway since 1930 has resulted in the extension of initial eradication to 154,737 acres as of January 1, 1941, leaving unworked 204,733 acres as of that date. Work in the fiscal year 1942 is expected to increase the amount of acreage initially eradicated to approximately one-half of the total control acreage. The disease is becoming more widespread each year on unprotected areas and cumulatively increasing damage may be expected. Additional subsequent reeradication must be made on parts of the control areas at intervals to insure protection from the rust.

Plan of work: Blister rust control measures as developed by the Bureau of Entomology and Plant Quarantine are used by the National Park Service on the national parks. Close contact is maintained with the Bureau on all phases of the white pine blister rust control program. The work consists of: (1) surveying and mapping the areas where control work is necessary because of the occurrence of Ribes species in and near stands of susceptible white pines on areas of such aesthetic and recreational importance that control work is justified; (2) systematic elimination of all Ribes plants within and adjacent to control areas; (3) checking the results to insure that adequate control is accomplished; and, (4) reexamination followed by repeat eradication of Ribes where needed.

The currant and gooseberry bushes are pulled by laborers working in organized crews. In the West most of the remaining work is in rugged mountainous country, relatively inaccessible. Laborers must be housed in camps. In the East the remaining work is such that it is not necessary to house the laborers in camps. In both the East and West, and especially in the sugar pine region of the West, the reduction in the number of CCC camps has made it impossible to accomplish but relatively little with the CCC.

Financial Requirements; About 70 percent of the requested increase will be used for wages and subsistence of temporary laborers. Tools, equipment, and expense of permanent employees will also be required. This itemization follows:

Temporary labor	$24,530
Supplies and materials	1,727
Communication service	25
Travel expenses	700
Rents	2,018
Equipment	6,000
Total increase	35,000

With the total increase requested it is expected to set up two 33-man blister rust control camps, one in Glacier National Park and one in Sequoia National Park.

Blister rust infection is present in Glacier National Park. It was contemplated that the initial eradication work could be continued with CCC enrollees but the number of CCC camps was drastically cut, thereby making it absolutely essential that one regular blister rust camp be established in the fiscal year 1943.

Planning for the control of white pine blister rust in the sugar pine region must include Sequoia National Park where the job of eradication of Ribes is of such magnitude that control work under regular funds must be started in the fiscal year 1943. Initial eradication has been started in Sequoia National Park with CCC, but the cut in CCC camps makes it imperative to establish one regular blister rust camp in the fiscal year 1943.

(b) An increase of $25,000 is requested for Ribes eradication on O&C revested lands, to provide for operations which cannot be carried on by CCC labor as heretofore because of material reduction in available CCC camps. The rust is now present and rapidly intensifying in unprotected O&C western white and sugar pine stands.

Objective: To control white pine blister rust by completing initial Ribes (currant and gooseberry) eradication on O&C Revested lands when such control work is necessary to protect white pines; to follow up initial work with second or subsequent workings needed to remove Ribes that have come in since initial treatment.

The problem and its significance: There are approximately 139,669 acres under the jurisdiction of the Oregon and California Revested Lands Administration on which five-needle pines occur. The total volume of these pines is about 1,126,000,000 feet, board measure, of which about four-fifths is sugar pine and the remainder western white pine. The value represented in this timber is such that unless funds can be provided to prevent the blister rust from reaching the pines a serious loss may follow.

Until July 1, 1941, no control work has been undertaken by the Administration with regular funds, although by January 1, 1941, 26,949 acres of O&C lands had been covered on the *Ribes* eradication program by the Bureau of Entomology and Plant Quarantine and by the O&C lands CCC camps. It is estimated that 139,669 acres of land require initial eradication. Hence, 112,720 acres remain to be worked, of which it is hoped that the two regular blister rust camps now established together with some CCC work will cover initially about 10 percent during the fiscal year 1942.

Plan of Work: Blister rust control measures as developed by the Bureau of Entomology and Plant Quarantine are used by the O&C Revested Lands Administration. Close contact is maintained with the Bureau on all phases of the white pine blister rust control program. The work consists of: (1) surveying and mapping the areas where control work is necessary because of the occurrence of *Ribes* species in and near stands of susceptible white pines on areas commercially important because of present or future timber values; (2) systematic elimination of all *Ribes* plants within and adjacent to control areas; (3) checking the results to insure that adequate control is accomplished; and, (4) reexamination followed by reeradication of *Ribes* where needed.

The currant and gooseberry bushes are pulled by laborers working in the organized crews. As the work is in mountainous country, the laborers must be housed in camps. Since the number of available CCC camps has been cut, blister rust work by the CCC will be materially reduced.

Financial Requirements: About 80 percent of the requested increase will be used for wages and subsistence of temporary laborers in the two proposed new camps. Tools and equipment will also be required. This itemization follows:

Temporary labor	$20,000
Supplies and materials	750
Travel expenses	200
Communication service	50
Equipment	4,000
Total	$25,000

(3) An increase of $271,668 is requested to provide (1) for matching contributions from cooperating States, local governmental organizations, and private individuals for blister rust control work on State and private lands; (2) for control work on State and private lands intermingled with and endangering Federal lands; and (3) for supervisory employees and for the replacement of necessary equipment in connection with and to supplement the operation of WPA projects as a part of the State program.

Objectives: (1) To cooperate with owners in the control of white pine blister rust on State and private lands throughout the white-pine-growing States; (2) to control this disease on those State and private lands that are intermingled with and endangering public forest lands in the Sugar Pine region of California and Oregon and the Western White Pine region of Idaho, Washington, and Montana; and (3) to utilize effectively relief labor made available through the State WPA blister rust control projects for *Ribes* eradication on State and private lands, as well as to supplement emergency relief work of this type in localities where WPA labor may not be available or cannot be used effectively.

The problem: Approximately three-fourths of the initial eradication of *Ribes* on State and private lands has been completed. Subsequent to initial eradication, a large part of the control area must be reworked one or more times for the removal of bushes that develop from sprouts and seedlings and this work has been done on about one-fifth of the estimated State and private control acreage requiring such treatment. There remain about 5,500,000 acres of initial *Ribes* eradication and a much larger acreage that will need reworking. Most of the State and privately owned acreage requiring initial re-eradication work is located in the Eastern white pine region.

(1) General legislation (54 Stat. 168, 169) provides and directs that funds for blister rust control be used on "all forest lands, irrespective of the ownership thereof, when in the judgment of the Secretary of Agriculture the use of such funds on such lands is necessary in the control of the white pine blister rust", and requires financial cooperation from State and local agencies and from individuals where work is done on State and private lands not intermingled with Federal property.

(2) Much of the initial and re-eradication work remaining to be done is located on State and private lands that are intermingled with and menace Federally owned forest lands in the Western White Pine region of Idaho, Montana, and Washington, and the Sugar Pine region of California and Oregon. To protect this highly valued Federally owned timber general legislation provides that blister rust be combatted on State and private lands adjoining and intermingled with Federal property through the expenditure of Federal funds without requiring the financial cooperation of the owners of such lands. To do this the work on these intermingled State and private lands must be coordinated with and proceed along with work on adjoining Federal forest lands. The Bureau of Entomology and Plant Quarantine is responsible for such work. No funds have been provided for this work for the fiscal year 1942.

(3) Blister rust control is one of the projects that has been allotted WPA emergency relief funds on a "Federal Agency" basis for the past several years. FA project allotments are being discontinued on December 31, 1941, and thereafter it is expected that WPA funds will be allotted to this work on the basis of Federally sponsored projects in the State WPA programs. Blister rust control work requires project supervisors, foreman supervisors for every 5 to 10 crews, transportation for laborers, Ribes eradication tools, camp equipment for work in remote forest areas, checkers to see that the work is properly done, and scouts to delimit areas needing crew work and to eradicate those with low Ribes populations where the more expensive crew methods are not required. These necessary overall requirements were provided for under FA projects and are needed to implement State projects and make it possible to use effectively labor that may be available for control work.

Significance: The white pines form a renewable forest resource of great importance to present and future forestry in this country. There are some 30,000,000 acres of control area in the United States, of which over 23,000,000 acres occur on State and private lands. The retention of these lands as white pine producing areas is necessary to provide for the continuous supply of white pine timber needed to promote the stability of forest-using industries, employment, and communities that are dependent upon white pine.

The blister rust disease is present in the commercially important white pine forest areas of this country, and in many places where no control work has been done or where the rust was well established before control measures could be applied, serious white pine losses have occurred, especially in the younger age classes. Such losses will continue each year as long as Ribes are left growing among or close to white pines. Where these bushes have been removed, effective control of the rust has been established and few or no new infections occur on the pines for several years. On portions of these protective areas where new bushes develop from sprouts or seedlings, new infections occur after several years, and such parts of the control areas have to be reworked from one to three times to protect the trees to maturity.

The initial and re-eradication work performed by relief labor (outside of CCC) employed on Federal agency blister rust control projects since 1933 aggregates 11,114,511 acres, or more than one-third of the Ribes eradication work accomplished by all agencies since 1918. This labor destroyed about 427,000,000 Ribes, and in doing this work the men were employed 2,234,693 man-days. The loss of this source of labor without provision for replacement would greatly reduce future accomplishments and result in increased white pine losses. This can be avoided to the extent that relief labor is obtainable through State WPA projects or is replaced with labor from other sources. The amount of control work remaining to be done is so large, and its need in many areas so great, that available relief labor is expected to be used to the fullest possible extent, provided the Department can finance adequate supervision and equipment.

Plan of work: The expenditures under this project will be primarily for labor to eradicate Ribes on State and private lands in cooperation with

State and local authorities and private owners, and for the supervision of such labor. Additional temporary field supervisors will be needed to assure that the work is carried out efficiently in the areas that have a sufficient public interest to justify Federal cooperation. The laborers employed under this allotment will work along with those employed with cooperative funds provided by State, local and private agencies, and the supervisors will direct not only Federal laborers but also those paid from cooperative contributions. The men work in crews composed of 3 to 5 unskilled laborers and a crew leader. Operations under all Federal, State cooperative relief and nonrelief sources are coordinated to provide an efficient and well-balanced program.

Financial requirements: The recommended increase of $271,668 for work on State and private lands is comprised primarily of 3 items; $103,278 to provide for the minimum contribution which general legislation requires of the Federal government for cooperative work on State and private property; $53,390 for blister rust control work on privately owned land intermingled with Federal property in such a way that blister rust in the privately owned forests would menace Federally owned pine; and $115,000 to provide for necessary overall expenses needed to operate State WPA projects, and to supplement such projects in areas where WPA labor is not available or cannot be used effectively.

The increase of $103,278 for cooperation is necessary owing to the fact that State and private cooperative appropriations for blister rust control for the fiscal year 1943 available for Ribes eradication work on private lands, already in sight, total $186,610. For the fiscal year 1942 the Federal appropriation available for compliance with the matching requirement is only $83,332. Without this proposed increase, it would be impossible for the Federal government to meet the statutory matching obligation on which the States and private cooperating agencies relied in making their own appropriation for blister rust control.

The estimate of $53,390 for work on intermingled forest lands relates to privately owned forests in the western white pine region of Idaho, Montana and Washington, and the sugar pine region of California and Oregon. The expenditures proposed under this estimate are for the protection of pulbicly owned forests and are needed to assure that blister rust work conducted on them will not be undone by the influx of the disease from points outside their boundaries. They are essential to assure a balanced and coordinated protective program.

The discontinuance of the Federal Agency Project under the WPA program makes unavailable the funds previously used for supervision, checking and scouting, the transportation of workers and the replacement of wornout equipment. Under the plan of using "State projects" for blister rust control in the future, such overall expenditures are not provided for. At least $115,000 will be needed to carry such expenses, as well as to supplement and replace the work heretofore carried on by relief labor wherever such labor may not be available or cannot be used effectively.

Requirements for future years under this item will depend on developments, including the amount of available cooperation and the extent to which relief labor is provided for blister rust control work.

The increase of $271,668 for these various obligations will be applied as follows:

Personnel (field)		Other Obligations	
Permanent:		Supplies and materials	$12,875
10 P-2 Project Supervisors at $2600	$26,000	Transportation and travel ...	22,500
5 SP-6 Checkers at $2000	10,000	Replacement of equipment	22,000
Sub-total, permanent personnel	$36,000		$57,375
Temporary:			
5 SP-5 Camp Bosses, 5 mos. at $2,000	4,166		
10 SP-5 Scouts, 5 mos. at $1800	7,500		
35 SP-4 Foreman Supervisors at $1620	23,625		
20 SP-4 Checkers, 5 mos. at $1620	13,500		
Temporary labor	129,502		
Sub-total, temporary personnel ..	$178,293		
Total personnel	$214,293		

Total increase $271,668

WORK UNDER THIS APPROPRIATION

Objective: To control the white pine blister rust on the white pine forest areas of the United States by the timely eradication of the disease-spreading alternate host plants, currants and gooseberries, so as to preserve the present and future economic, aesthetic and recreational values of these forest trees.

The problem and its significance: There are 8 species of white pine in this country, three of which are of great economic value. The 3 commercial species are the eastern white pine which extends from Maine southward to Georgia, and westward to Minnesota; the western white pine of the northern Rocky Mountain region and the sugar pine of Oregon and California. The present mature stands of these trees have an estimated stumpage value of about $350,000,000 and the young growth represents considerably greater values in potential future crops. The white pines in general are also highly important over extensive areas for aesthetic, recreational and water-shed use on public and private lands. The conservation of the country's white pine resources is an integral part of the National Defense program as productive forests and timber supplies are recognized as important military assets in time of war and peace. The control of blister rust is necessary to protect

and conserve the supply of this valuable wood for present and future National Welfare, to provide for the stability of white-pine-using industries, and to maintain employment and community welfare in white pine producing areas.

White pine lands needing protection from blister rust occur on the National forests, National Parks, O&C revested Lands, Public Domain, Indian Reservations, State forests and privately owned forests. The white pines constitute a renewable forest resource of great importance to present and future forestry in this country. These forests are in serious danger from white pine blister rust, a destructive fungous disease of foreign origin that is now present in 27 States. The rust kills the white pines, the young trees dying quickly and the older trees more slowly. In unprotected areas the young growth and many of the older trees scattered through the forests are already succumbing to the disease. The fungus which causes blister rust spends part of its life cycle on currant and gooseberry plants. Spores produced on these plants infect white pines, where cankers are formed that eventually kill the trees. Control is accomplished by the elimination of the currant and gooseberry bushes within and near white pines.

Blister rust control work is tremendously important on 17 western National forests where western white and sugar pines are significant and valuable components of the timber stands. In the Inland Empire (eastern Washington, northern Idaho, and western Montana), the continued production of western white pine is essential to the maintenance of local industry and production of valuable timber products for nation-wide markets. The same is true of sugar pine within its natural range in California and Oregon. Both regions are highly important as sources of commercial timber supplies.

The lumber industry is the backbone of local economy in the Inland Empire States and in the timbered regions of California and Oregon. Without the highly valuable western white and sugar pines, commercial timber operations, and therefore employment of thousands of workers in the woods and in mills, would be economically impossible on the present scale. The National Forests, which are managed to supply a sustained yield of timber, must be protected from this foreign disease in order to safeguard present and future timber supplies and labor-providing potentialities.

Eastern white pine is also important commercially, but its protection from blister rust in the National Forests of the Eastern and Central States is being handled largely by the CCC. Much of the control area in western National Forests, however, is so rugged and remote that CCC camps cannot be established and used for control work. It is planned to continue to utilize the CCC and relief agencies to the utmost possible extent, but relief labor in these thinly populated areas is too scarce to do the job in time. The rapid spread of infection in Idaho, and from Oregon into California, necessitates a type of program which relief agencies cannot provide, if the areas not yet initially worked are to be protected from disaster.

Status of the work: There are some 29,000,000 acres of control area in the United States. The first eradication of *Ribes* has been carried out on over

21,000,000 acres, and a second working on about 7,000,000 acres. There remain over 7,000,000 acres of first eradication still to be carried out and it is estimated that portions of the control area needing a second, third, or fourth eradication will aggregate about 21,000,000 acres of rework.

Of the total control area, over 23,000,000 acres are in State and private ownership. As of January, 1941, over 18,000,000 acres of the latter had been initially eradicated of Ribes, leaving about 5,000,000 unprotected. In addition over 6,000,000 acres of initially protected areas had been reworked once, and in a few cases oftener, to destroy sprouts and seedling developing subsequent to the initial eradication. It is estimated that portions of the control area still needing a second, third or fourth eradication will aggregate about 16,000,000 acres of rework.

In the Inland Empire and the California-Oregon sugar pine type 2,600,000 acres of National Forest land must be protected from the disease, which is becoming more widespread each year on unprotected areas and is causing cumulatively increasing damage on them. As of January 1, 1941, 1,349,000 acres had received initial treatment and 1,251,000 acres of initial work remained to be done -- 875,000 in the sugar pine region, and the remainder in the western white pine region. In addition 353,000 acres had been reworked. It is estimated that the portions of the control area that will need a second, third or fourth eradication will aggregate about 3,000,000 acres of rework.

There are approximately 359,000 acres of control area in 13 National Parks on which important stands of white pinesoccur. Since 1929 control work on National Parks has resulted in the initial eradication of Ribes on 154,737 acres as of January 1, 1941, leaving unworked 204,733 acres as of that date. Work in the fiscal year 1942 is expected to increase the amount of acreage initially eradicated to about one-half of the total control acreage. Subsequent reeradication following initial work must be performed on parts of the control area where Ribes come back from seeds or sprouts to maintain protection from the rust. It is estimated that the portions of the control area that will need a second, third, or fourth reeradication will aggregate about 445,000 acres.

White pine blister rust control was initiated in the National Park Service with small, regular appropriations in 1929 at Acadia National Park and in 1930 at Mt. Rainier National Park. With the spread of the disease southward, both in the East and in the West, more areas have been either directly affected or threatened until now practically all Park areas having important white pine areas require early control work to protect these trees.

The National Parks are established on areas of surpassing aesthetic and recreational value. In certain National Parks, such as Acadia, white pine is the principal coniferous tree. In other parks white pine stands occur in very conspicuous and strategic locations and disfigurement by blister rust would be disastrous to the appearance of the Park. In such areas as Crater Lake and Sequoia National Parks, the white and sugar pines provide a background for spectacular features of the park, and Yosemite has extensive stands of outstanding sugar pine forest. A great deal of the aesthetic and recreational value of these parks would be lost without the white pine background.

A careful study has been made of National Park areas bearing white pines in order to hold the control areas to the minimum on which the pines are of outstanding scenic, scientific, or recreational value. Areas have been excluded from control plans where the pines were of little importance. The area included in the control program is the minimum considered adequate to preserve important white pine values. The Government has recently spent millions of dollars to acquire white and sugar pine areas to add to the already considerable areas of fine white pines within the parks. *Ribes* eradication is essential to prevent the loss of these trees from blister rust.

Under the jurisdiction of the O&C Revested Lands Administration, white pines occur on 139,000 acres of Oregon forest lands in sufficient numbers to justify the expense of protection against white pine blister rust. The total volume of these pines exceeds 1,200,000,000 feet board measure, of which about four-fifths is sugar pine and the remainder western white pine. These species are among the most valuable permanent components of these forests and must be protected from blister rust if they are to be produced there indefinitely. They are highly valued and very desirable for forestry purposes and their loss from blister rust would greatly reduce the productive value of these lands.

Progress during 1940: During the calendar year 1940 the agencies which have carried on these operations independently or cooperatively have destroyed 69,220,205 *Ribes* on 1,971,494 acres of control area. The total acreage covered consisted of 1,208,830 acres of initial eradication, and 762,664 acres of re-eradication. The details of this work are shown in the following tables:

Table 1. *Ribes* eradication work during the calendar year 1940 (Initial and Re-eradication)

Regions	Initial eradication	Re-eradication	Total initial eradication and re-eradication[1]	Effective labor	*Ribes* destroyed
	Acres	Acres	Acres	Man-days	Number
Northeastern St.	336,364	365,474	701,838	139,239	10,983,619
South. Appal. St.	563,636	92,185	655,821	28,663	3,106,985
N. Central St.	221,726	117,783	339,509	68,889	16,592,751
Western Wh. Pine States (Idaho, Mont. & Wash.)	36,608	80,990	117,598	144,149	19,834,139
Sugar Pine Sts. (Calif. & Ore.)	50,496	106,232	156,728	142,279	18,702,711
Rocky Mt. Sts. (Colo. & Wyo.)	-	-	-	-	-
Total	1,208,830	762,664	1,971,494	523,219	69,220,205

1. Includes work of cooperating Federal, State, and local agencies.

Table 2. Summary of Acreage Worked in 1940 by Programs (Initial and Re-eradication)

Regions	Regular and Cooperative Programs	W.P.A. Programs	C.C.C. Programs	Total All Programs	Total Emergency Programs
Northeastern Sts.	90,731	440,417	170,690	701,838	611,107
South. Appal. Sts.	10,493	253,912	75,104	339,509	329,016
No. Central St.	1,174	621,934	32,713	655,821	654,647
Western Wh. Pine St.	56,156	43,017	18,425	117,598	61,442
Sugar Pine Sts.	36,520	79,168	41,040	156,728	120,208
Total	195,074	1,438,448	337,972	1,971,494	1,776,420

Table 3. Summary of Acreage Worked in 1940 by Land Ownership (Initial and Re-eradication)

Ownership	Eastern White Pine region	Western White Pine region	Sugar Pine region	Total
Federal				
National Forests	226,975	66,906	59,005	352,886
O & C Revested Lands	--	--	3,315	3,315
Other Public Dom.	3,092	699	--	3,791
National Parks	30,793	1,990	20,157	52,940
Indian Reserv.	4,808	--	--	4,808
Total Federal	265,668	69,595	82,477	417,740
State and Private	1,431,500	48,003	74,251	1,553,754
Grand Total	1,697,168	117,598	156,728	1,971,494

Table 4. Progress on National Forest Lands in 1940

Region	Control Area Acres	Ribes Eradication - Acres					Unworked Acres
		1st Working	2nd Working	Additional Rework	Total	Total Initial Work to date	
Northeastern	14,473	-	-	-	-	12,887	1,586
Lake States	380,042	31,059 *	10,900	-	41,959	242,131	137,911
Southern Appalachian	1,189,835	163,671	19,935	1,410	185,016	1,118,288	71,547
Subtotal* Eastern Regions	1,584,350	194,730	30,835	1,410	226,975	1,373,306	211,044
Sugar Pine	1,213,767	17,955	38,566	2,484	59,005	338,602	875,165
Western White Pine	1,341,547	22,393	38,726	5,787	66,906	1,009,346	332,201
Subtotal Western Regions	2,555,314	40,348	77,292	8,271	125,911	1,347,948	1,207,366
Total	4,139,664	235,078	108,127	9,681	352,886	2,721,254	1,418,410

* National Forest work in Eastern Regions handled almost entirely by Emergency funds, much of it directed by Bu. E. & P.Q.

Table 5. Progress on National Parks in 1940

	Control Area Acres	Ribes Eradication - Acres					Unworked Acres
		1st Working	2nd Working	Additional Rework	Total	Total Initial Work to date	
Northeastern	20,716	---	---	---	---	20,668	48
Lake States	---	---	---	---	---	---	---
Southern Appalachians	72,296	24,712	6,081	---	30,793	67,223	5,073
Subtotal Eastern Regions	93,012	24,712	6,081	---	30,793	87,891	5,121
Sugar Pine	226,304	18,164	1,993	---	20,157	56,019	170,285
Western White Pine	40,154	1,533	457	---	1,990	10,877	29,327
Subtotal Western Regions	266,458	19,697	2,450	---	22,147	66,846	199,612
Total	359,470	44,409	8,531	---	52,940	154,737	204,733

In recent years most of the Ribes eradication work has been performed with CCC and emergency relief labor and this policy was continued during 1940. The number of individuals employed during the season totaled 13,248 which is somewhat less than during 1939. Of this number, 5,353 were obtained from emergency relief rolls, 5,293 from the CCC and 2,603 were employees of the Department and its cooperating State and local agencies. The latter includes 705 employees used to supervise the large amount of labor employed on this project. Cooperating states and townships provided substantial funds and services for participation in the control program.

Control work in forested areas of the Western White and Sugar Pine regions and of northern Minnesota are so remote from sources of labor, that it is necessary to subsist the employees in camps. A total of 79 camps were operated during the season, of which 38 were manned with relief labor and 41 with temporary employees of the Department and cooperating agencies. In addition, varying amounts of labor were assigned from 196 CCC camps in the white pine regions of the country. These camps were operated by the Forest Service, Soil Conservation Service, National Park Service, Office of Indian Affairs and Cooperating States.

Ribes eradication work was carried on in 54 nurseries to protect over 58,000,000 white pines growing in the nurseries and transplanted beds. In this work 21,669 acres of protective zones were eradicated of 225,307 Ribes. The protective borders around some of the nurseries are now practically Ribes-free and are maintained in this condition by periodical inspections at intervals of two or more years.

Continued attention was given to the eradication of the cultivated black currant, Ribes nigrum, in white pine regions, and 7,091 of these plants were destroyed in 1,052 locations. Nearly all of these bushes were found in the Lake States region.

Within infection areas there are many white pines of high ornamental, recreational, and forest value that have been attacked by blister rust. Some of these trees are too badly diseased to be salvaged, but others can be saved by cutting out the diseased parts. This treatment was given to 49,742 infected trees and 9,170 were destroyed because they were so heavily infected that they could not be saved.

White pine stands and their protective borders aggregating 1,683,979 acres were mapped in 1940 and scheduled for blister rust protection.

Studies and field experiments to develop and improve control practices resulted in the discovery that wild Ribes require cross pollination to produce mature fruits. This fact gives promise of being a natural aid in eliminating Ribes seeding in control areas, as these plants become scarce as the result of Ribes eradication. A mixture of dry Borax and salt was found to be a harmless, cheap, and effective chemical for killing decapitated Ribes crowns and roots. The efficiency of hand grubbing in dense brush fields was improved by employing a specially equipped caterpillar tractor to make man-ways across troublesome areas. A winch-operated Ribes hook was effectively used in conjunction with this tractor for

uprooting large bushes in open forest types. A canvass of safe-sling and a mechanically operated safety-catch were devised for the protection of workers destroying Ribes growing in cliffs or steep hazardous situations. This equipment was tested in the summer of 1940 and found to be satisfactory and application has been made for a public service patent on the safety-catch.

The rust continues to spread to new locations within the known infected area but this area was not extended during the year. Infected sugar pines were found for the first time in Viola, California, about 107 miles south of the Oregon border in the vicinity of Ribes infections found there in 1938. In general climatic conditions for rust spread were unfavorable in the Sugar Pine region during 1940, but scattered diseased sugar pines were found in the Klamath National Forest to a sufficient extent to indicate that pine infection is probably thinly distributed over the entire forest.

Quarantine enforcement: A Federal blister rust quarantine has been in force for a number of years to prevent the spread of blister rust into uninfected and lightly infected areas. The Federal Quarantine is coordinated with and supplemented by State laws and regulations governing the intrastate movement of host plants. Under this project, arrangements are made in cooperation with interested State and Federal agencies to issue to nurseries the permits required by Federal and State quarantines for shipment of Ribes into the States concerned and the refusal of such permits with respect to proposed shipments into white pine growing areas.

The Federal quarantine is enforced by the Division of Domestic Plant Quarantine through its transit inspection service, which provides for the examination of nursery stock enroute at key transfer points in the United States. In this way violations of the quarantine are intercepted and the shipments returned or other appropriate action taken. During 1920, the first year of transit inspection, 12 out of each 1,000 shipments were intercepted because they were found to be moving in violation of the white pine blister rust quarantine, while in 1941 considerably less than 1 per 1,000 shipments were found not in compliance with the regulations. These measures are a necessary adjunct to control operations and have been effective in preventing the artificial spread of the rust and the replanting of cultivated Ribes in control areas.

PASSENGER-CARRYING VEHICLES

The authorization for the purchases of passenger-carrying vehicles for this appropriation provides for a decrease in number of cars estimated to be purchased from 22 in the fiscal year 1942 to 9 in the fiscal year 1943. The purchase of the 9 cars will be made by the Bureau of Entomology and Plant Quarantine and will permit the replacement of an equal number of vehicles, at an estimated cost of $5550. No passenger-carrying vehicles will be purchased by the Forest Service, Department of Agriculture or by the Interior Department in the fiscal year 1943.

All of the old cars to be turned in by the Department of Agriculture are of 1938 or earlier model. The average mileage of the machines to be turned in was in excess of 65,000 miles on August 1, 1941, and, of course, additional mileage will be used before the cars are actually exchanged.

The 9 new cars to be purchased by the Department of Agriculture will be used by agents and supervisors in white pine blister rust control throughout the white pine growing regions of the United States. One new car each is to be used at Spokane, Washington, Richmond, Virginia, Oakland, California, Milwaukee, Wisconsin, Waterville, Maine, North Conway, New Hampshire, Littleton, New Hampshire, Madison, Wisconsin, and Towanda, Pennsylvania.

AGRICULTURAL MARKETING SERVICE

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation Act, 1942, plus $2,465 supplemental for within-grade promotions	$168,573
Budget estimate, 1943	169,300
Change from 1942:	
Net reduction in working funds	- 1,608
Additional for administrative promotions	+ 2,335
Net increase	+ 727

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. General administration and business service	$165,302	$166,108	$164,500	-$1,608
2. Net cost of within-grade promotions	- -	2,465	4,800	+ 2,335
Unobligated balance	806	- -	- -	- -
Total	a/ 166,108	168,573	169,300	+ 727

a/ Includes $8,802 transferred in 1941 from "General Administrative Expenses, Food and Drug Administration", pursuant to Reorganization Plan No. IV, under which Naval Stores and Insecticide Act Administrations remained in the Department of Agriculture.

DECREASE

The decrease in working funds of $1,608 in this item for 1943 will be met by a reduction of expenditures for supplies and equipment.

WORK UNDER THIS APPROPRIATION

This appropriation provides for the general administrative direction of all activities of the Agricultural Marketing Service including: (1) Determination of policies and procedure; (2) coordination of the various lines of work; (3) planning and outlining activities; (4) planning and direction of cooperative agreements between the Service and various public and private agencies; (5) correlation and supervision of operating functions including: (a) fiscal transactions involving preparation of budgets and budgetary control, maintenance of allotment and expenditure ledgers, and administrative examination and payment of expenses including pay rolls; (b) personnel activities involving classification, appointments and records; (c) procurement, covering property accountability, leases, bids and purchases; (d) technological investigations pertaining to problems connected with the administration of various regulatory Acts; (e) distribution of mail and filing of correspondence; and (f) punch card and machine tabulating service.

(b) CROP AND LIVESTOCK ESTIMATES

Appropriation Act, 1942 plus $9,618 supplemental for within-grade promotions ...	$758,618
Budget estimate, 1943	757,435
Change from 1942:	
Net reduction in working funds	-10,000
Additional for administrative promotions ...	+ 8,817
Net decrease	- 1,183

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Crop, livestock and related reports	$722,674	$749,000	$739,000	-$10,000 (1)
2. Net cost of within-grade promotions	- -	9,618	18,435	+ 8,817
Unobligated balance	6,326	- -	- -	- -
Total	a/ 729,000	758,618	757,435	- 1,183

a/ Includes $4,000 transferred from Weather Bureau pursuant to Reorganization Plan No. IV, for maintenance of current weather records for use in connection with crop estimating.

DECREASE

(1) The decrease in working funds of $10,000 in this item for 1943 will be met by discontinuing preharvest wheat survey for which $10,000 was appropriated in 1942.

WORK UNDER THIS APPROPRIATION

Objective: To furnish, at appropriate intervals throughout the year, comprehensive and reliable information with respect to current and prospective supply and disposition of agricultural commodities. To maintain current and historical records relating to agricultural production, price, utilization, stocks, sales, and other information essential to the formulation of agricultural policies and national legislative programs.

The problem and its significance: The task of gathering primary data on the many phases of food production and utilization involves extensive and careful analysis of hundreds of thousands of individual reports on over 100 farm commodities. The maintenance of comparability of reports from period to period, while meeting the many changing conditions taking place in the methods of production and areas of production, calls for the highest degree of coordination among the 41 field offices and continual improvement in the methods used.

The basic data collected are essential to the several agricultural programs carried on for the benefit of agriculture. Without it a sound legislative program would have been impossible and the administration of any of these programs would have been extremely difficult.

More recently, as in every national emergency, there have been added demands for information upon which to base the production program for national defense. Requests by the various defense agencies are for information in addition to the current program and not in substitution for any part of it.

General plan: The work under this appropriation is carried on through a Washington staff of trained statisticians and statistical clerks and a competent force of statisticians and clerks in each of 41 field offices.

Approximately 320,000 farmers serve as regular crop correspondents, reporting regularly on crop and livestock conditions. In addition, approximately 300,000 farmers cooperate each year in furnishing detailed reports of acreage in crops and numbers of livestock on their own farms. Another list of approximately 180,000 local merchants, mills, elevators, ginners, cold storage warehouses, dairy manufacturerers, etc., furnish regular reports upon which the Department bases its releases on prices received by farmers for products sold, prices paid for commodities bought, and various other releases relating to stocks and processing of agricultural products.

Examples of progress and current programs: Many of the new developments during the past year have been closely associated with defense activities. While it has been impossible to meet all of the demands and to fill all of the requests, considerable assistance has been given to the various defense agencies. The following is a brief summary of some of the more important services rendered during the year:

At the request of the various national defense agencies, several special surveys were undertaken. In March and early April a comprehensive survey of grain storage capacity and stocks of grain on farms was undertaken. Information collected related to type of storage, capacity, railway connections and waterfront facilities. The information also showed the various grains on hand on March 1, available space as of March 1, and the estimated space as of June 1. On the basis of this information a critical situation with respect to storage for the current grain crop was solved.

The first vegetable seed stock survey since the last War was made as of November 1, 1940, and in February 1941 a further inquiry was made to determine the acreage planted for the current year. The information collected was essential in determining the Government policy with respect to the import and export of vegetable seeds. A survey of cold storage facilities was undertaken at the request of the Transportation Division of the Office of Production Management and a detailed tabulation of this material supplied that office in September.

The assurance of an adequate supply of manufactured dairy products to meet domestic and Lease-Lend requirements is a matter of considerable concern both to the Department of Agriculture and to defense agencies. Lacking information on present plant capacity and possible need for additional equipment during the

coming year, the Agricultural Marketing Service and the Surplus Marketing Administration collaborated on a survey of dairy plants. This survey was completed in September, and is being used in connection with the Department's program for increasing the supply of these products for defense purposes and in the determination of priorities.

Plan of work during the coming year under this appropriation will necessarily be influenced by the demand for emergency aid for defense activity. Because the Crop Reporting Board has been a source of basic statistics on agriculture for a period of more than 75 years, it has been called upon to render additional services in every national emergency during that period and to aid in all of the national farm programs undertaken. In view of this long established policy and the present condition of world affairs, it is evident that the program of work conducted under this appropriation during the coming year will have to anticipate a considerable demand for extra and special services as well as continuation of the regular work on about its present basis.

SUPPLEMENTAL FUNDS *

Direct Allotments

Projects	Allotments, 1941	Estimated allotments, 1942	Estimated allotments, 1943
Working Fund, Agriculture, Agricultural Marketing Service (Advance from Census Bureau): For statistical and other services in connection with the 1940 Census of Agriculture	$30,000	- -	- -
Emergency Relief Appropriation Act:			
Farm employment survey	168,450	- -	- -
Administrative expense	7,104	- -	- -
Planning and review of W.P.A. projects	- -	$6,420	- -
Total, Emergency Relief Appropriation Act	175,554	6,420	- -
Total, Supplemental funds (direct allotments)	205,554	6,420	- -

* Directly relating to regular work under this appropriation item.

(c) FARM LABOR STATISTICS

Second Supplemental National Defense Appropriation Act, 1942	$250,000
Budget estimate, 1943	500,000
Change from 1942:	
Net increase in working funds	+250,000

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Collecting, compiling and analyzing farm labor statistics ..	- -	$250,000	$500,000	+$250,000

INCREASE

An additional $250,000 is needed to carry the present project for the full fiscal year 1943.

The problem and its significance: The second supplemental National Defense Appropriation Act, 1942, approved October 28, 1941, included an appropriation of $250,000 to provide farm labor statistics for the remainder of the fiscal year 1942. At the time this appropriation was considered by the Bureau of the Budget and Congress it was indicated that $500,000 would be required to conduct the program then presented for a full year.

While the need for better and more complete farm labor information on a continuous basis has long been felt by the Department, the present critical situation arising out of the war effort has greatly accentuated this need.

With the increasing demand upon agriculture to produce food for domestic use and for shipment to the nations resisting aggression, it is essential that an adequate supply of farm labor be available. No information has been available by States relative to the number of people employed on farms, the wage rates, earnings and the effect of mechanization or other shifts in farming practices and changes in tenure status on total agricultural employment. Without this information and the requirements for farm labor which will be provided by this appropriation, it would be impossible to deal with farm labor problems most effectively.

General plan: Practically all of the additional work is being conducted in the 41 statistical field offices of the Agricultural Marketing Service under the direction of the Federal Statistician in each of these States. Additional personnel, both technical and clerical, has been added to the State offices to compile the information and to issue State reports. This personnel is also charged with the responsibility of directing special investigations into the farm labor problems peculiar to areas where transient or migratory labor is extensively used during the crop season.

WORK UNDER THIS APPROPRIATION

Objective: To provide for reports of employment on farms, demand for farm labor and prevailing wage rates.

The problem and its significance: The Nation's food supply is a vital part of its defense. The problem facing agriculture today is to feed the Nation and to furnish food to Britain and the other nations resisting aggression. The Department of Agriculture has been assigned the responsibility of assuring an adequate food supply for these purposes. To meet this obligation adequate information must be provided as to the needs for agricultural labor as a basis for action to relieve critical shortages as they may arise.

During the war period, 1914-18, a need for information as to farm labor supply and demand was partially met by the introduction of a series of opinion reports expressed in percent of normal supply and demand in the reporter's locality. These opinion reports served only as rough indications and could not be converted to quantitative estimates of either supply or demand. Beginning with 1924, estimates of farm employment of the farm operator, family workers and hired workers have been published on a monthly basis. This series of employment estimates, however, is limited to totals for the United States and for major geographic divisions. All of the information collected came as a by-product of the crop reporting work. While these statistics were available on a current basis, they did not come anywhere near meeting the needs of agriculture, the defense agencies, nor of the other governmental agencies concerned.

The reports now provided for under this appropriation are used directly by several governmental agencies. The Farm Security Administration makes extensive use of the data in connection with its program for providing housing facilities. The field forces of the Department of Agriculture work closely with the field forces of the Farm Placement Service of the Social Security Board. A considerable part of the information being collected both under this project and the crop reporting project is used immediately by the Farm Placement Service in its work to alleviate farm labor shortages. This office of Agricultural Defense Relations makes extensive use of the information in assisting farmers in the many problems relating to priorities.

General plan: The work is being handled through the 41 Crop Reporting offices, where the data are being assembled, tabulated and released for each State. The utilization of established offices under the direction of trained and experienced personnel permits the most economical use of the funds available.

This information of farm labor, together with that on crop conditions, prospective production and labor requirements is further summarized by the Bureau of Agricultural Economics on a regional basis. Such regional analysis provides a basis for action by all agencies concerned with the problem of assuring adequate labor for farm operations.

The data is made available by States and, in special problem areas, on less than State or regional bases. The farm labor information is analyzed in light of crop production and crop conditions and is employed as a direct aid to farmers in correcting farm labor shortages.

(d) MARKET NEWS SERVICE

Appropriation Act, 1942 plus $5,795 supplemental for within-grade promotions ..	$1,139,295
Budget estimate, 1943	1,118,655
Change from 1942:	
Net reduction in working funds	- 33,500
Additional for administrative promotions ..	+ 12,860
Net decrease	- 20,640

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Market news on livestock, meats and wool	$460,379	$468,500	$455,000	-$13,500 (1)
2. Market news on fruits and vegetables	437,316	438,890	427,200	- 11,690 (1)
3. Market news on dairy and poultry products	132,197	132,640	126,000	- 6,640 (1)
4. Market news on grain, hay, feed, seed, rice, hops and beans	72,455	73,470	72,800	- 670 (1)
5. Market news on cottonseed	15,647	20,000	19,000	- 1,000 (1)
6. Net cost of within-grade promotions	- -	5,795	18,655	+ 12,860
Unobligated balance	7,006	- -	- -	- -
Total	1,125,000	1,139,295	1,118,655	- 20,640

DECREASE

(1) The decrease in working funds of $33,500 in this item for 1943 will be met by discontinuing the issuance of market reports on Saturdays. This will effect savings in leased wire costs by reducing the leased wire contract to a 5-day week. It is also planned to discontinue the leased wire between Fort Worth and San Antonio, Texas and to provide for the issuance of a somewhat curtailed report at San Antonio by commercial telegrams. It will also be necessary to reduce the amount of information released from various offices, including the possible elimination of reports on grain from Chicago.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (deleted matter enclosed in brackets):

> Market news service: For collecting, publishing, and distributing, by telegraph, mail, or otherwise, timely information on the market supply and demand, commercial movement, location, disposition, quality, condition, and market prices of livestock, meats, fish, and animal products, dairy and poultry products,

fruits and vegetables, peanuts and their products, grain, hay, feeds, cottonseed, and seeds, and other agricultural products, independently and in cooperation with other branches of the Government, State agencies, purchasing and consuming organizations, and persons engaged in the production, transportation, marketing, and distribution of farm and food products, [$1,133,500, of which $5,000 shall be available for the maintenance of a market news service at New Orleans, Louisiana] $1,118,655.

This change strikes out the provision for the maintenance of a market news office at New Orleans, Louisiana. The market news office at New Orleans is a part of the regular program for the conduct of the market news service in a large number of markets. No reductions are contemplated with the present appropriations and the retention of the specific provision for New Orleans is unnecessary.

WORK UNDER THIS APPROPRIATION

Objective: To supply producers, shippers, distributors, handlers, and others with unbiased, timely and accurate information relative to shipment, market supplies and prices, and the conditions affecting the market.

The problem and its significance: It is well established that producers, shippers, and distributors of farm products, especially those subject to more rapid price changes, want and need the most complete picture possible to obtain each day of prevailing market prices, supplies arriving and on hand in the markets, and the rate of shipment of supplies to market. They want this information from an unbiased source. Commercial agencies do not, nor are they in position to, furnish such information on a national scale in the detail required if it is to be of value as a basis for individual transactions. The problem under this appropriation, therefore, is to furnish market information that is adequate, accurate, and timely. The most pressing problem in recent years has been to meet the changing market conditions arising as a result of the increasing use of the motor truck, the widening of the market area, and the demand from producers for reports on more commodities and the coverage of more markets..

It is generally accepted that marketing cannot proceed in an orderly way unless both buyer and seller are informed as to supply, price, and all other factors contributing to the making of the market. The sellers - farmers and shippers mostly - are widely scattered at great distances from the actual market place and are, therefore, at a disadvantage unless they are provided with reasonably complete and unbiased information. The market reports provided under this appropriation fill this need and have over a period of some 20 years become the recognized official source of information for the markets covered.

The current national emergency has placed additional responsibility on the facilities provided under this appropriation. Detailed information as to market conditions is required when prices and methods of distribution must be given special attention. The work under this appropriation was started in

1915 to furnish farmers for the first time unbiased information as to market conditions for fresh fruits and vegetables. It was extended to other commodities and rapidly expanded during the war. The current appropriation is approximately 25 percent less than the amount available in 1917, whereas the changes that have taken place in the marketing system during the intervening 25 years have increased the need for, and added greatly to the significance of, adequate market information.

General plan: The work under this appropriation is organized along commodity lines, as follows: (1) Livestock, meats and wool; (2) fresh fruits and vegetables; (3) dairy and poultry products; (4) grain, hay, and feed; (5) cottonseed. Under each of these projects the plan of work is generally similar. Market reporters located in the important market centers are responsible for reporting the market receipts, prices, and general market conditions for the group of commodities to which they may be assigned. The information so collected is interchanged between markets. Radio, press, or mail reports are released from each market. There are in all about 115 market news field offices provided for under this appropriation. The number varies somewhat from year to year because of the varying requirements for temporary seasonal offices in producing sections.

Examples of progress and current programs: This is a continuing activity and changes from year to year are generally confined to improvement in the method of gathering and disseminating the information or rendering services at additional markets - some of which are provided for by additional appropriations, and some of which are effected by more efficient use of the funds and personnel available. It is never possible to meet all of the requests for expanding this activity. This is particularly true with respect to fresh fruits and vegetables, and livestock.

The most outstanding development during the year has been the improvement in the distribution of the information and its adaptation to new uses. For the past two or three years a more coordinated plan for servicing radio stations has been developed. In furtherance of this general plan, a central informational contact point has been established in Atlanta, where one market news office serves as a disseminating point for all of the commodity releases. Improvement in dissemination and cooperation with radio stations and the press was immediate. In Chicago, where the commodity markets are widely separated, a central informational office was established. This office assembles information from all of the commodity reporting offices and prepares special reports for radio and the press. This arrangement does not interfere with the regular dissemination by the several offices covering their respective markets, but it does provide for a coordinated report on the Chicago market and increased coverage of the area has been marked. Wider radio dissemination has been marked in all of the commodity groups. Some 340 radio stations are now using market reports. This represents an increase of 80 stations during the year.

One example of wider dissemination of fruit and vegetable commodity information is the new service to Florida growers. A special report in season is prepared in the market news office in New York and released at 9 o'clock each morning. This report is sent by leased wire to Atlanta, where it is relayed by Press Associations and is flashed from some seven radio stations in Florida before

ten o'clock each morning. The early morning report on the New York market instituted last year continues to be popular. This report covering the wholesale fruit and vegetable market for farmers in the Northeast is released by 6 o'clock each morning.

Before resuming the report during the current season, farmers were circularized and out of 1,182 farmers' replies 97 percent requested the resumption of the report.

The extension of the report to new uses has been an important development accentuated by the defense activities. During the year the National Defense Advisory Commission and later the Office of Price Administration and Civilian Supply became interested in the consumer broadcast which has been developed in a limited way over a period of years. As a result of the request and with some clerical and technical assistance, the market news offices in ten cities undertook to prepare special radio broadcasts. At the present time some 20 cities are covered by this type of service.

(e) MARKET INSPECTION OF FARM PRODUCTS

Appropriation Act, 1942 plus $2,090 supplemental for within-grade promotions	$461,090
Budget estimate, 1943	468,837
Change from 1942:	
Additional for administrative promotions	+ 7,747

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Inspection and certification of fresh fruits and vegetables	$273,543	$275,000	$275,000	- -
2. Inspection and certification of processed fruits and vegetables	36,230	43,700	43,700	- -
3. Grading and certification of dairy and poultry products ...	54,818	54,900	54,900	- -
4. Inspection and certification of rice, hay, beans, peas and seed	32,531	28,700	28,700	- -
5. Grading and certification of meats	32,924	33,700	33,700	- -
6. Inspection of cottonseed	22,879	23,000	23,000	- -
7. Net cost of within-grade promotions	- -	2,090	9,837	+$7,747
Unobligated balance	6,075	- -	- -	- -
Total	459,000	461,090	468,837	+ 7,747

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored):

> Market inspection of farm products: For enabling the Secretary of Agriculture, independently and in cooperation with other branches of the Government, State agencies, purchasing and consuming organizations, boards of trade, chambers of commerce, or other associations of businessmen or trade organizations, and persons or corporations engaged in the production, transportation, marketing, and distribution of farm and food products, whether operating in one or more jurisdictions, to investigate and certify to shippers and other interested parties the class, quality, and condition of cotton, tobacco, fruits, and vegetables, whether raw, dried, or canned, poultry, butter, hay, and other perishable farm products when offered for interstate shipment or when received at such important central markets as the Secretary of Agriculture may from time to time designate, or at points which may be conveniently reached therefrom, under such rules and regulations as he may prescribe, including payment of such fees as will be reasonable and as nearly as may be to cover the cost for the service rendered: Provided, That officers and employees who, under proper authorization, use privately owned motor vehicles in the performance of official travel within the corporate limits of their official stations for the purpose of inspecting and grading farm and food products and the supervision thereof at points located within the said corporate limits may be reimbursed for such travel at a rate not to exceed three cents per mile: Provided further, That certificates issued by the authorized agents of the Department shall be received in all courts of the United States as prima facie evidence of the truth of the statements therein contained, [$459,000] $468,837.

In many instances an inspector is required to inspect commodities at warehouses, railroad yards, packing plants, docks, and a number of other widely separated points frequently inaccessible with respect to public transportation within the limits of his official station. In the interest of performing the work efficiently and promptly the use of an automobile is necessary. At some points Government cars are provided but in other instances where the volume of work is relatively small or in cases where a temporary volume of work develops it is neither feasible nor economical to provide Government-owned automobiles. In such cases the use of the inspector's privately owned car is permitted and he is allowed to claim reimbursement for the cost of gasoline and oil.

At the present time persons who are permitted to use their private cars for transportation within the corporate limits of their official stations are required to submit receipts for all expenditures. The administrative audit procedure is greatly complicated by reason of the fact that verification of all claims is required and extensive reporting and itemization is necessary in the preparation of the reimbursement accounts. The procedure which would be permitted by the proposed change in language would greatly simplify the auditing procedure and on the whole would be more economical and advantageous to the Government in carrying on the work provided for under this appropriation.

WORK UNDER THIS APPROPRIATION

Objective: Standards for quality description are uniform in reality only to the extent that they are interpreted accurately and applied consistently. Producers as a rule are not qualified to inspect according to detailed grade specifications. Buyers and sellers need evidence of inspection as a basis for transactions when one party or both may not be in position to examine the product. The objective of this appropriation is to furnish trained inspectors who will inspect and certify as to grade and condition individual lots upon application and upon payment of a fee by the applicant for inspection.

The problem and its significance: To consummate a satisfactory contract or agreement, it is essential that both buyer and seller fully understand the quality of the product being exchanged. With the widespread markets that are made possible by present day transportation and communication, one of the most important problems in marketing is the provision for some means whereby the products can be accurately and impartially described. An inspection certificate issued under this project provides the buyer and seller with evidence of an impartial examination of the products it covers.

The most important recent problem under this appropriation has been to meet the increased demand for inspection on the part of governmental purchasing agencies. Purchases under Lease-Lend and surplus disposal programs are made subject to inspection by the Agricultural Marketing Service. This has resulted in a tremendous increase in the volume of work. At the same time the increased attention paid to uniform grading by governmental purchasing organizations has increased the demand for regular commercial grading services.

Although the inspection work done under this appropriation is permissive in that inspections are made only upon application by interested parties, the importance and value of this work is not limited to the individuals who may be parties to a merchandising contract. This activity has an important and fundamental public interest. It promotes better marketing by the use of uniform standards. The inspection certificates aid in settling and avoiding disputes which arise among buyers, sellers, carriers, and other parties as to the quality and condition of the commodities involved in individual transactions. Programs conducted with producers for the improvement of quality and the handling of agricultural products have for years been based on the application of uniform grading standards. The inspection work is directly related to the administration of other Federal activities.

For example, the administration of many marketing agreements and surplus control programs under the Agricultural Adjustment Administration would be handicapped or impossible without inspection. Purchases by the Surplus Marketing Administration are based upon official inspection. A large volume of various foods are inspected for the Navy and the Army while many State purchasing agents have utilized the service for years.

Some of the regulatory Acts administered by the Agricultural Marketing Service could not be administered successfully without the inspection service. For example, inspection certificates frequently constitute the principal evidence upon which a decision can be made under the Perishable Agricultural Commodities Act.

General plan: Inspection work conducted under this appropriation is permissive, inspections being made only at the request of interested parties. A large part of the work is conducted cooperatively with State agencies under which the Agricultural Marketing Service licenses the inspectors and supervises their work.

Examples of progress and current programs: Substantial increases are shown in almost every line of work conducted under this appropriation. Much of this is the direct result of the increased purchases of food products for the growing armed forces, and purchases under the Lease-Lend Act. Growth in the regular inspection work has also taken place and is indicated by an increase of 32 million pounds of butter graded and an increase of about 1,350,000 dozens eggs marketed under consumer grades. Canning factories for fruits and vegetables using continuous factory inspection increased from 2 to 20. These additional 18 plants will probably pack around 10,000,000 cases of canned fruits and vegetables during the year. The quantity of meat graded reached an all-time high, an increase of over 92,000,000 pounds, or about 17 percent over the previous year. Similarly, the 635,000 cars of fresh fruits and vegetables inspected represents the greatest quantity ever inspected in this work.

This increase was largely due to the volume inspected for the Navy, Marines, and Quartermaster Corps, amounting to about 40,500,000 pounds out of a total of 48,000,000 pounds.

Grading and certification of dairy and poultry products likewise show large gains during the fiscal year. The increase in many of these items, such as dried eggs, dry milk, and cheese is due to the increased purchases by the Surplus Marketing Administration. It is significant, however, that butter grading was not influenced by these factors and the 32,000,000 pounds increase over the past year represents an actual increase of commercial work done.

For the coming year it appears that this project will be called upon to handle an increasing amount of work, both for regular commercial use and for the National defense organizations. In addition to the increased purchases for the armed forces of this country and shipment to foreign countries, any price legislation affecting food products will undoubtedly create an additional demand for grading work.

Revenue

For several years fees collected from applicants for inspection have amounted to approxiamtely 75 percent of the expenditures under this item. During the past fiscal year funds returned to the Treasury amounted to 86.5 percent of the expenditures for this work.

The following table shows the quantity of products graded or inspected during the fiscal year 1941, as compared with 1940:

Commodity	Volume of Work 1940	1941
Fresh fruits and vegetables:		
Shipping points (cars or carlot equivalents)	468,293	498,731
Receiving markets (cars or carlot equivalents)	47,256	46,106
Processed fruits and vegetables (number of gradings)	7,998	14,203
Dairy and poultry products:		
Butter graded (pounds)	245,066,927	277,101,127
Cheese graded (pounds)	5,516,607	39,953,012
Eggs graded (cases)	2,776,532	3,320,585
Dressed poultry, graded (pounds)	15,875,359	20,840,060
Dressed poultry, inspected (pounds)	70,386,026	76,917,214
Live poultry, graded (pounds)	753,674	1,133,461
Dressed turkeys, graded (pounds)	37,659,686	45,866,964
Frozen eggs, inspected (pounds)	774,480	245,650
Frozen eggs, graded (pounds)	- -	21,672,348
Dry skim milk, graded (pounds)	5,000,000	30,396,270
Evaporated milk, graded	43,500,000(lbs)	5,439,106(cans)
Dried eggs, graded (pounds)	- -	944,419
Rice (hundred-weight)	2,940,896	4,484,482
Hay (number of inspections)	7,679	8,800
Beans, dry edible (1,000 bags)	2,084	5,231
Peas (1,000 bags)	1,227	1,025
Seed (pounds) (dockage inspection of timothy and sweet clover)	8,958	5,498
Meats: (pounds)		
Fresh frozen:		
Beef	544,810,856	636,917,734
Veal and calf	6,082,344	8,414,121
Lamb and mutton	23,460,669	28,937,766
Pork	6,118,856	9,822,301
Cured:		
Beef	1,911,234	1,669,032
Pork	24,980,962	11,767,164
Manufactured:		
Lard and lard substitutes	1,054,357	1,673,648
Sausage and ground meats	29,681,178	6,598,685
Miscellaneous meat products	2,293,065	4,158,228
Cottonseed (samples analyzed)	57,436	56,793

SUPPLEMENTAL FUNDS

Direct Allotments

Projects	Allotments, 1941	Estimated Allotments, 1942	Estimated Allotments, 1943
Salaries and expenses, Veterans' Administration (Transfer to Agriculture) (Agricultural Marketing Service)	45,000	47,200	47,200
Working Fund, Agriculture, Agricultural Marketing Service (Advance from Subsistence of the Army, War Department) Inspection of processed foods	17,000	181,910	181,910
Incidental Expenses of the Army (Transfer from War Department): Inspection of hay and supervision of Army hay inspectors	3,250	3,250	3,250
Total, Supplemental funds (Direct Allotments)	65,250	232,360	232,360

(f) MARKETING FARM PRODUCTS

Appropriation Act, 1942, plus $1,680 supplemental for within-grade promotions	$401,680
Budget estimate, 1943	367,450
Change from 1942:	
Net reduction in working funds	-40,000
Additional for administrative promotions	+ 5,770
Net decrease	- 34,230

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
Standardization and marketing research on:				
1. Fresh fruits and vegetables	$56,257	$57,700	$54,000	-$3,700 (1)
2. Processed fruits and vegetables	4,388	4,500	4,500	- -
3. Livestock, meats and wool	73,125	75,000	65,000	-10,000 (1)
4. Dairy and poultry products	20,763	21,300	18,000	-3,300 (1)
5. Grain, rice, beans, peas, hay and seed	90,679	93,000	83,000	-10,000 (1)
6. Cotton	145,023	148,500	135,500	-13,000 (1)
7. Net cost of within-grade promotions	- -	1,680	7,450	+ 5,770
Unobligated balance	9,765	- -	- -	- -
Total	400,000	401,680	367,450	-34,230

DECREASE

(1) The decrease in working funds of $40,000 in this item for 1943 amounts to a 10 percent reduction and will necessitate curtailment of work connected with the several projects conducted under this appropriation.

In each instance the expenditures for travel, supplies, and equipment will be held to a minimum. The reduction on fruit and vegetable work will be met by reducing the research on marketing methods and practices and the discontinuance of all work on the development of new grades except in the most urgent cases. The work on mohair standardization will be discontinued and one technical man on meat standardization will be transferred to other work.

A general reduction will be made in the number of spinning and fiber tests in connection with the cotton standards. The hay standardization work, the investigation and checking of new moisture testing instruments and devices for the measurement of gluten in wheat will be discontinued.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (new language underscored):

> Marketing farm products: For acquiring and diffusing among the people of the United States useful information relative to the standardization, classification, grading, preparation for market, handling, and marketing of farm and food products, including the demonstration and promotion of the use of uniform standards of classification of American farm and food products throughout the world, <u>and for making analyses of cotton fiber as provided by the Act approved April 7, 1941 (55 Stat. 131), $367,450</u>: Provided, That samples, illustrations, practical forms, or sets of the grades recommended or promulgated by the Secretary of Agriculture for farm or food products may be sold under such rules and regulations as he may prescribe, and the receipts therefrom deposited in the Treasury to the credit of miscellaneous receipts.

This change combines the administration of the Act approved April 7, 1941, with the cotton research work performed under this appropriation.

WORK UNDER THIS APPROPRIATION

<u>Objective</u>: To provide the technical information needed as the basis for establishing and modifying standards by which the variations in quality of farm products may be described in the marketing process; and to collect and publish information concerning the methods used in packing, grading, handling, and distributing farm products, including the compilation of statistics showing shipments, market receipts, and sources of market supplies.

<u>The problem and its significance</u>: Uniform standards and grade specifications are a fundamental requirement for efficient marketing. They reduce confusion, waste, and chicanery and permit uniform description and inspection in all parts of the country.

The importance of standards and official inspection on the basis of uniform standards has been recognized by Congress and the States by the enactment of numerous statutes and legislative authorizations. Among the Federal laws in which Standards are essential in the administration are: The Grain Standards Act, the Cotton Futures and Cotton Standards Act, The Commodities Exchange Act, the Tobacco Inspection Act, the Cotton Grade and Staple Statistics Act, The Perishable Agricultural Commodities Act, and the Export Apple and Pear Act. The extensive permissive inspection and market reporting work carried on by the United States Department of Agriculture independently and in cooperation with State agencies rest upon the work done under this appropriation.

General plan: The work is planned along commodity lines, each of six groups of workers dealing with a group of related commodities as follows: (1) fresh fruits and vegetables, (2) processed fruits and vegetables, (3) livestock, meats, and wool, (4) dairy and poultry products, (5) grains, hay, beans, and seed and (6) cotton.

For all of the commodities the basic plan of work is similar. A continuing plan of study under which the worker keeps informed of changes taking place in production and marketing problems is followed for each of the crops. In addition to the long-time or continuing program, each worker must be available to render assistance to the grader confronted with a new and unusual problem. Another function of the workers under this project is the demonstrational work with producers and handlers.

Examples of progress and current programs: Highlights of the research under each of the commodity groups follow:

1. Fresh fruits and vegetables: Some 99 standards for 65 fresh fruits and vegetables have been established. During the past year standards for 11 commodities were revised; these include asparagus, broccoli, cherries, citrus (Florida and Texas), cucumbers, grapefruit (California and Arizona), oranges (California and Arizona), lemons, onions, pears, and shallots. Studies are now under way with a view to announcing standards for pears for canning, blueberries, beets for canning, grapefruit for canning, and squash. Manuscripts now in process include "Economic Study of the Pecan Industry"; "Marketing Maine Potatoes"; "Carlot Shipments of Fruits and Vegetables"; and "Wholesale Prices of Fruits and Vegetables at New York".

Last year a study was conducted in Chicago, through the retail trade, on consumer grades for potatoes. Limited funds for this work have made it impossible to push this phase of the work as rapidly as it should be. A bulletin, "Buying Guide for Consumers," issued last year, has received immense popular acceptance.

2. Processed fruits and vegetables: There are at present 52 standards in effect for processed fruits and vegetables, of which 42 are for the canned product, 3 for dried fruits, 2 for frozen vegetables, and 6 for barrelled fruits and vegetables. The use of these grades by commercial concerns and Federal, State, and municipal purchasing agencies is increasing rapidly and the work in this field to develop needed grade specifications has been particularly hard pressed.

Recently a considerable amount of time has been spent with the Army and Navy in assisting them in drawing up specifications for canned fruits and vegetables. With the increased buying under Lend-Lease, all of which is inspected by the Agricultural Marketing Service, the research personnel has been utilized extensively in the "servicing" of the inspection forces.

3. Livestock meats, and wool: Standards have been established for slaughter livestock and for stocker and feeder cattle, calves, sheep and lambs. Standards have also been established for carcass meat.

Work is progressing on grades for cured meats. Studies are also being made to determine the relationship between the grades of slaughter lambs and selling price and between the grades of the carcass and selling prices. Studies are being made to develop more objective methods for the determination of the ratio of fat and bone to lean meat in the various cuts of meat.

During the past year the personnel has given assistance to the Provisions Committee of the Federal Specifications Board in developing new specifications and revising old ones. In addition, revision of Department Bulletin No. 1360 "Marketing Classes and Grades of Livestock" was completed. Miscellaneous Publication No. 391 "Federal Beef Grading" and No. 392 "Buying Beef by Grade" were completed and published. Service and Regulatory Announcements No. 114 "Official United States Standards for Veal Calves and Calf Carcasses" and No. 123 "Official United States Standards for Lambs, Yearling Mutton, and Mutton Carcasses" were completed and published.

Wool shrinkage studies are directed toward arriving at a practical means of sampling and determining the shrinkage of a producer's wool clip as an aid to him in marketing. At the present time there is considerable uncertainty attached to the estimate of shrink; the buyers tend to bid low because of the great difficulty of estimating accurately the amount of shrinkage in a particular clip. Obviously if a reasonably accurate method could be devised for measuring the actual shrinkage in a particular clip of wool it would be of tremendous value throughout the entire wool industry. The work has proceeded to the point where 78 individual shrinkage tests on random hand samples selected from the opened seams of bags have produced shrinkages which in no instance had a deviation greater than 1.5 percent from that of the entire lot under test. A statistical analysis of the results of recent tests indicates that the method now being employed when used in connection with original bag territory and Texas wool of uniform grade or graded Fine and 1/2 Blood territory wool will in no instance vary more than 2 percent.

4. Dairy and poultry products This work is directed toward the establishment and maintenance of the grades, assistance to the grading force in meeting special problems, and assistance to producers in their marketing problems. Recently, because of the unusual volume of Government purchases and the corresponding increase in grading work both for the Government and commercial grading, it has been necessary to devote almost full time in meeting the special grading problems that arise.

Grades have been established for butter and cheese; dressed chicken, ducks, geese, guineas, and squab; eggs; live poultry; and dressed turkeys. The Lend-Lease purchase program has made it necessary to provide inspection for a large number of other commodities, notably dry and evaporated milk, dried and frozen eggs. This unusual situation has required special attention to the formulation of specifications and inspection procedure.

5. Grain, Hay, Beans and Seed: Grain The work on grain standards is closely linked to the administration of the Grain Standards Act. The official grain standards of the United States have been used satisfactorily during the past 25 years, because desirable, well considered revisions have

been made as changing conditions warranted. Changes in production methods, varieties, trade practices, and use of the various grains require revision of the standards to reflect equitably the quality values of the grains and to make the certificates of grade issued of maximum value. Over a million certificates of grade are issued under the Grain Standards Act in an average year, representing yearly 2 billion bushels of grain ordinarily valued at over 1 billion dollars.

During the year new or revised standards were promulgated for soybeans, rye and oats. The expansion of acreage and the growth in importance of the soybean crop, together with the fact that the commodity is handled in the same channels of merchandising as the other grains, led to the amendment of the United States Grain Standards Act in July 1940 providing that soybeans be regarded as a grain within the meaning of the statute and that official mandatory standards should be brought within its terms. As a result, revised soybean standards were promulgated under the Grain Standards Act to become effective on September 1, 1941 to serve this year's crop.

During the year the rye standards were amended to meet a problem involving the sizing of rye after it had left the hands of producers and had reached the terminal markets.

The new grades became effective July 1, 1941, and the differences in value between the old and new grades were reflected in trades made before that date for delivery under the new standards.

A new grade, to be known as "Special Red Oats" was promulgated effective July 1, 1941 which will be operative for the current crop movement.

The photometric or "electric eye" method of determining the protein content of wheat flour, reported on last year, has been tested in field operation and extended to include the entire wheat kernel. Additional evidence has been accumulated that the method affords a better measure of gluten content in wheat than does the conventional method now in use. Work is now being directed toward the elimination of certain technical difficulties and toward the further simplification of the procedure and equipment.

Publications during the year include seven bulletins, seven articles for technical publications, three mimeographed reports, and five handbooks, manuals, and Service and Regulatory Announcements. Among the publications were the revised issue of Farmers' Bulletin 1839, "The Uses of Alfalfa", and Farmers' Bulletin 1636, "Farmer--Bulk Storage of Small Grain". Perhaps one of the more important bulletins issued during the year was one dealing with the soybean. This bulletin, Technical Bulletin 748, "Rapid Determination of Soybean Oil Content and of Iodine Number of Soybean Oil", is an adaptation of the "electric eye" to determine the oil content of the beans. This may provide a means whereby farmers may be paid on the basis of the oil content of the soybeans delivered to the crushing plant

Hay: Hay standardization has come in for more than the usual amount of attention during the past year or two, largely because of the heavy purchase of hay by the Army. For a number of years the Agricultural Marketing Service has taken the responsibility of training Army inspectors and in supervising their interpretation of the grade standards at the various Army posts. Supervision of the regular commercial hay inspection was likewise heavier. The hay standards are the basis of all contracts by the Army and most other Government agencies and about 2,000 type samples of hay, showing the various grades and kinds of hay were prepared during the year.

6. Cotton: The Agricultural Marketing Service is charged with the responsibility of cotton standardization, classification, ginning research, and market news work of the Department of Agriculture, as provided by six legislative acts, (Cotton Futures Act, Cotton Standards Act, Cotton Ginning Act, and Cotton Quality Statistics Act with two Amendments).

For the purpose of supporting, reinforcing, and improving the cotton regulatory and service work, it has been necessary to carry on closely related and coordinated cotton quality, standardization, and marketing researches. The laboratory and service work are especially designed and conducted so as to supplement each other in a mutually helpful way.

The laboratory testing and studies are closely tied in with the cotton regulatory and service problems, and day by day contact with the practical grading, stapling, and service work is an essential element in the successful accomplishment of much of the laboratory work.

Many of the samples which the laboratories study are those which have to do with prescribed grades and staples of cotton and which are involved in commercial marketing, price quotations, and market news. Classification offices and cotton specialists are located throughout the South and in Washington through which samples can be obtained as they flow through its classification offices, or can be selected from stocks-for-standards at Washington, which conform to prescribed grades and staples, and which possess, in many cases, known histories as regards variety, point of growth, crop year, ginning, storage, etc.

An important development during the year was the passage of an amendment to the Cotton Grade and Staple Statistics Act approved March 3, 1927. This amendment (Public Law 30, 77th Congress) authorizes the Secretary of Agriculture to make analyses of fiber properties, spinning tests and other tests of the quality of cotton samples submitted to him by cotton breeders and others. This service is the outgrowth of laboratory work conducted over a period of years to develop practical means for testing small samples of cotton that would provide a detailed picture of the quality of these small samples. An important phase of this work has been the development of bases of comparison against which the data from a single sample could be compared to determine the quality as related to the bulk of American cotton. Although no facilities heretofore have been available for making service tests for the public, progressive breeders have recognized that such facilities would tend to eliminate much of the inefficiency of cotton breeding and production which arises out of the development of new cottons that do not possess the quality desired by mills. When such cottons get into commercial production, they result in lower prices to the farmer and may injure the reputation of an entire cotton-producing area. Thus through the new service tests that are now provided and close cooperation with cotton breeders, the fiber and spinning laboratories are rendering an important service in the improvement of American cotton which should prove an important benefit to American cotton farmers.

Fiber and spinning tests are nearing completion on the extensive regional variety series that have been conducted on cotton grown in the rainfall and irrigated parts of our Cotton Belt for three years. A considerable number of commercially grown varieties of cotton have been included. The results from these measurements show certain ones to be definitely superior to others in spinning quality and market values; others to be appreciably lower. Such data indicate cotton most advantageous for farmers to grow.

The cotton testing laboratories are being called upon more and more to furnish information needed for defense purposes. In such cases it is the policy of the laboratories to defer regular work until the special tests have been completed. Some illustrations follow:

Spinning and fiber tests are now being made to determine the relative utility of 35 samples of Sea Island cotton, with special reference to their suitability for balloon fabric. Such fabrics constitute the chief material of which both man-carrying and barrage balloons are made, and cotton of extremely high quality is required. These tests will indicate the suitability of the cotton already available for balloon cloth, and will provide a basis for the selection of the strains of Sea Island that should go into any increased acreage that may be used for defense.

In response to requests from the medical and purchasing units of the War and Navy Departments, from the Food and Drug Administration, and from the National Bureau of Standards, fiber length tests are made from time to time on samples of absorbent cotton. Absorbent cottons with a greater proportion of short fibers than that allowable by the specifications are undesirable for use in and with the dressing for the more important body wounds resulting from combat and from surgical operations. In another instance the facilities of a laboratory were called upon for special service in providing information as to the differences between the physical properties of cotton required for mixture with asbestos in the manufacture of brake linings for the Army.

(g) TOBACCO INSPECTION AND TOBACCO STOCKS AND STANDARDS ACTS

Appropriation Act, 1942, plus $1,575 supplemental for within-grade promotions	$534,575
Second Deficiency Act, 1941 (available in 1942 for providing inspection and news service at additional markets)	131,000
Total available, 1942	665,575
Budget estimate, 1943	671,660
Change from 1942:	
Additional for administrative promotions	+ 6,085

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Administration of the Tobacco Inspection and Tobacco Stocks and Standards Acts	$431,190	$664,000	$664,000	- -
2. Net cost of within-grade promotions	- -	1,575	7,660	+$6,085
Unobligated balance	1,810	- -	- -	- -
Total	433,000	665,575	671,660	+ 6,085

WORK UNDER THIS APPROPRIATION

Objective: To assist tobacco growers to obtain better returns for their tobacco according to the quality produced. This is accomplished by providing uniform standards which may be used by farmers in preparing their tobacco for market, official inspection at designated markets at time of sale, and market information as a price guide to farmers by which the fairness of the offer by the buyer may be judged. The effectiveness of the whole program is materially increased by demonstration work with farmers and farm groups to show them how to prepare their tobacco for market according to the official grades.

The problem and its significance: Approximately 90 percent of the tobacco grown in the United States, having an annual average value of about $252,183,000, is sold at public auction on about 138 markets. Prices for the various grades in a single day's sale may range from as low as 3 cents a pound to as high as 50 or 60 cents a pound. The conditions of the sale, especially the rapidity with which judgment must be passed on a given lot of tobacco, result in a fairly high percentage of sales in which the grower fails to obtain an equitable price for the quality of the crop he has produced. The tobacco of any type includes an extraordinary range of quality,

characteristics, and values, based on technical consideration with which the farmer, as a rule, can never expect to become wholly familiar. Under these conditions the problem becomes one of providing him with information upon which he can judge quickly and with assurance whether or not the price offered for his crop is in line with the quality.

In the absence of official inspection and price reporting, the growers are completely without means to determine value according to quality and without a measuring stick for quality itself. It is conservatively estimated that avoidable losses to growers from these factors alone aggregate from 5 to 10 million dollars annually. The over-all problem of helping farmers to market their tobacco therefore may be considered in three general categories: (1) To provide standards for the measurement of quality in tobacco and methods of applying those standards on behalf of the producer at the time of sale; (2) to furnish a price reporting service by which the grower may be informed of current market values according to grades; and (3) through demonstration work with farmers to assist them in the better preparation of their tobacco for market.

The problem presented in preparing the quarterly stocks report required by the Tobacco Stocks and Standards Act becomes one of obtaining accurate information from dealers and manufacturers as to the quantity and character of tobacco held.

There are 26 types of American-grown tobacco and several types of foreign-grown tobacco sold in the United States. The law requires separation of the holdings as to type and also as to certain groups of grades which have to do with the use of the tobacco for different manufacturing purposes. The significance of the quarterly stocks reports lies in the fact that the holdings of tobacco by dealers and manufacturers represent much more than half of the supply of tobacco at the time growers deliver the crop for sale. An accurate appraisal of the volume and quality characteristics of the existing supply is therefore indispensable to an understanding of the market conditions affecting growers. This is particularly true in connection with the formulation and prosecution of programs under the Agricultural Adjustment Act and related legislation.

General plan: On markets designated for inspection under the Tobacco Inspection Act, inspectors examine each lot of tobacco prior to sale and indicate the standard grade on the basket ticket. Daily price reports are made available on the market floor for the use of growers. By these means it becomes possible for the grower to ascertain the grade of his tobacco and compare the bid price with the current market average for tobacco of the same grade as shown in the price report. This represents an information service which penetrates to the heart of the principal weakness of the auction market system. On all auction markets the grower has the privilege, within certain time limits, of rejecting the sale and calling for resale. If from the price comparison indicated he finds that his tobacco was sold at a price materially below the current market average, he is then in position to act intelligently in the rejection of the sale.

Demonstration work is an important adjunct of the inspection activity. Through practical demonstration, usually on the farm, meeting with farm groups and organizations, the grades and handling methods are demonstrated and explained. In addition, the practical application of inspection and market reporting on the auction floor is demonstrated. Approximately 60,000 farm people are contacted annually through this demonstration project. The results are apparent in an improvement in the quality of tobacco appearing on the auction floor and the wider use of the price reports in the marketing process. Specific evidence of the value of this work to producers is the complaint from so-called "pin-hookers" or speculative buyers that it is becoming more difficult to make much profit in speculative transactions.

Examples of progress and current programs: Increased appropriations for 1942 provided for designating 43 additional markets for the current fiscal year. Approximately 60 percent of all auction markets are now designated for inspection. The Tobacco Inspection Act now applies to all auction markets except one dark air-cured market, four auction markets in Maryland, and 49 markets in the flue-cured districts from Virginia to Florida.

The following table shows the volume of tobacco graded for the past two years:

Tobacco Inspections 1940-41 Compared With 1939-40

	1940-41 Pounds	1939-40 Pounds
On Auction Markets		
Flue-cured	147,319,848	245,399,625
Fire-cured	99,667,174	89,792,408
Burley	182,397,084	132,952,792
Dark air-cured	39,401,203	19,088,679
Total auction	488,785,309	487,233,504
Inspections of Packed Tobacco		
In hogsheads	66,757,749	10,951,815
In bales	3,716,960	6,452,760
Total packed	70,474,709	17,404,575
Total inspection	559,260,018	504,638,079

During the past year there were 2,451 farm and school demonstrations and farmers' meetings held during which 62,550 farmers and agricultural students were contacted. This compares with 1,973 demonstrations and 55,575 farmers and agricultural students contacted during the previous year. In addition, exhibits were placed at 31 county fairs.

The following specific cases are illustrative of the practical value of the grading, market reporting and demonstrational work. A grower in North Carolina offered a lot of 286 pounds of tobacco and was bid 22 cents on the first sale. The price report showed an average of 28 cents for the quality offered. The first sale was rejected and resold at 27 cents resulting in a gain of $14.74 or nearly 27 percent more than the original sale. Another North Carolina producer rejected the first sale on 6 lots of tobacco because the price bid on some of the lots was less than half of the average price shown on the report. His resale of the six lots netted $42.85 more than the original sale and represented gains of from 10 percent to 133 percent on the individual lots. Several hundred similar individual cases could be cited from the experience in the various markets last year.

(h) PERISHABLE AGRICULTURAL COMMODITIES AND PRODUCE AGENCY ACTS

Appropriation Act, 1942 plus $1,525 supplemental for within-grade promotions	$153,525
Budget estimate, 1943	175,585
Change from 1942:	
Net increase in working funds	+ 20,000
Additional for administrative promotions	+ 2,060
Net increase	+ 22,060

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Enforcement of the Perishable Agricultural Commodities and Produce Agency Acts	$151,634	$152,000	$172,000	+$20,000(1)
2. Net cost of within-grade promotions	- -	1,525	3,585	+ 2,060
Unobligated balance	366	- -	- -	- -
Total	152,000	153,525	175,585	+ 22,060

INCREASE

(1) The increase in working funds of $20,000 in this item for 1943 is for more complete checking of compliance with the licensing requirements of the Perishable Agricultural Commodities Act and to expedite the handling of complaints filed under that act.

Objective: More effective enforcement of the Perishable Agricultural Commodities Act for the protection of the fresh fruit and vegetable industry.

The problem and its significance: All commission merchants, dealers and brokers handling fresh fruits and vegetables in interstate and foreign commerce must be licensed under the Perishable Agricultural Commodities Act. Unless all eligible dealers are licensed and all not entitled to a license under the law are excluded, the practices forbidden by the Act cannot be dealt with effectively.

There is a constantly shifting personnel engaged in the produce trade. This applies particularly to the itinerant dealers, owning their own trucks, who buy in one State and transport and sell their goods in another. The present enforcement personnel is inadequate to check upon their operations.

As a result of a reduction in appropriation for the fiscal year 1941 it was impossible to fill a vacancy, and the number of men engaged in licensing work was thereby reduced by 25 percent. The curtailment of personnel resulted in a reduction of 980 licenses and a decrease of more than $9,000 in receipts in less than two years. In order adequately to cover the country on this licensing work not less than six field men are necessary. Eight could be used to good advantage.

Enforcement of these Acts through the investigation of complaints and the entertaining of claims for reparation has meant thousands of dollars annually to producers and shippers of fruits and vegetables. An illustration is a case of a complaint filed against a carlot distributor in the Middle West alleging violations of the Act through failure truly and correctly to account to various shippers for whom the distributor acted as agent. Upon completion of the investigation, the respondent paid 19 shippers the amounts due them and fully credited the accounts of 22 shippers to whom money was still due. Such settlements amounted to $14,885.67. The investigation in this case resulted in the discontinuance of this firm from business. As the number of precedents has accumulated through formal orders of the Secretary, there is a tendency for complaints to be more complicated and require more time for investigation. During the past fiscal year 580 field investigations were made compared with 433 during the preceding year.

General plan: Commission merchants, dealers and brokers are interviewed and applications for licenses are obtained. When eligibility is determined license is issued, and the annual fee of $10 is collected. Evidence of transaction of business without a license is collected and prepared as a basis for injunction proceedings and suits to collect penalty. More than 20,000 licenses are now in force.

The increase will provide for the opening of an office in New York City, from which can be handled investigations of complaints against licensees New York and the New England States. This office can also investigate complaints of a more general nature relating to abuses alleged to be practiced in New York City. The increase will also provide for two additional investigators, one to cover the Atlantic Coast area, and one the Pacific Coast. These three men will be in travel status about 80 percent of the time

investigating dealers at shipping points and at towns and cities in their respective areas to secure compliance with the licensing provisions of the Act. They will also make special investigations of violations and claims as they arise in the administration of the law.

WORK UNDER THIS APPROPRIATION

Objective: To administer the Perishable Agricultural Commodities Act (7 U.S.C. 499a-499r) and the Produce Agency Act (7 U.S.C. 491-497). The object of these Acts is to protect producers and handlers against certain unfair and fraudulent practices in the handling of fresh fruits and vegetables.

The Perishable Agricultural Commodities Act requires that all commission merchants, dealers, and brokers be licensed and a fee of $10.00 be paid annually. Upon evidence of violation of the Act or the regulations issued thereunder the Secretary is authorized to suspend or revoke a license. The Secretary also is authorized to entertain complaints for damage from violations of the Act and to determine the amount of reparation due.

The problem and its significance: For many years conditions in the fruit and vegetable industry were such that producers (the commodities dealt with being perishable) were virtually forced to submit to almost any construction that the dealer wished to place upon a contract, even though it involved rejection of a shipment or the granting of an allowance. On the other hand, shippers frequently also would refuse to deliver on contracts unless it was to their advantage to do so. The hundreds of thousands of small transactions annually in this industry usually make it impracticable for growers and distributors to go to the expense of filing suits in distant jurisdictions. These conditions caused confusion and avoidable losses in marketing these products and made it difficult for scrupulous dealers to stay in business, a situation which led to the passage of the Produce Agency Act and the Perishable Agricultural Commodities Act.

The administration of the Perishable Agricultural Commodities Act requires prompt investigation of complaints, more than 26,000 having been received since the Act was passed in 1930; the investigation of applications for licenses and the issuance of licenses and the institution of formal proceedings where the facts warrant such action. Numerous inquiries must be answered regarding interpretations of the Act and the regulations.

This is a highly competitive business and the annual turnover of produce dealers is large. In recent years many motor truck operators have functioned as dealers. This group is particularly difficult to keep track of. There are large numbers of such dealers who are subject to the Act and should be licensed.

General plan: The enforcement work of both laws is organized as one unit. The Perishable Agricultural Commodities Act requires each commission merchant, dealer, and broker handling fresh fruits and vegetables in interstate and foreign commerce to secure a license from the Department at a fee of $10.00 per annum.

More than 20,000 licenses are now in effect.

Enforcement work falls into three general classes of procedure:

(1) Settlement of complaints between persons.

The Secretary of Agriculture is authorized to accept complaints from persons seeking damage because of violation of the law, and to issue reparation awards if the Act is found to have been violated and damage sustained. If the award of the Secretary is not paid and an appeal is not taken to a United States District Court within 30 days, the license of the offending party is automatically suspended by law. Informal amicable settlements involving more than $1,904,000 have been arranged.

(2) Disciplinary action against licensees.

Since the Act was passed, the licenses of 70 dealers have been revoked and the licenses of 98 firms have been suspended for periods of from 10 to 90 days. In addition, the licenses of 284 firms have been suspended automatically for failure to pay reparation awards issued against them. Penalties have been imposed by the courts upon several firms for refusing to obtain licenses.

The checking of interstate motor truck operators and other prospective licensees was handled the past year as in previous years by three traveling investigators who followed the marketing season in several of the shipping districts. In the sections covered excellent check-ups were accomplished, but three men cannot cover the country.

(3) Determination of disputes.

Many dealers are now availing themselves of the opportunity to present to the Department for determination disputes in which both parties desire to have their rights determined under the Act, and mutually agree to accept the Department's decision. This procedure results in prompt adjustment of the rights of the persons involved without the filing of a complaint and the formal issuance of an award.

It is believed that the purpose of the Act can best be accomplished by aiding licensees in their efforts to avoid violations rather than to discipline them after violations have occurred. To achieve this purpose better, field offices were established several years ago in Los Angeles and Atlanta, and last year offices were opened in Portland and Chicago. Well trained and competent field representatives have been placed in these offices to handle investigations of complaints arising in their respective districts, and to be available for consultation by the produce trade and growers.

In the enforcement of the Produce Agency Act, punishment for violation is by fine or imprisonment, or both. Since its enactment in March 1927, 1,974 complaints have been filed and 107 convictions have been obtained.

Examples of progress and current program: During the year a total of 2,341 complaints were filed of which amicable settlements were effected in 744 cases and which involved payments aggregating $236,938.57. There were 253 formal orders issued by the Secretary, 209 of which were reparation orders involving $100,819.15. Five licenses were revoked during the year; 11 licenses were conditionally suspended; and 42 licenses became automatically suspended by operation of law because of failure to pay the reparations ordered in these cases. A total of 580 complaints were made the subject of personal investigations in the field. This is an increase of 147 personal investigations over those made during the fiscal year 1940, or about 25 percent. Seven injunctions, temporary or permanent, were obtained against violators of the Act.

Under the Produce Agency Act a total of 73 complaints were handled during the year, of which 30 were made the subject of personal investigations in the field. There were no convictions or sentences under the Produce Agency Act during the fiscal year. However, one case was nol prossed upon payment by the defendant of the amount of $1,000 which was distributed among the shippers whose produce the defendant had handled on commission.

The following table summarizes the licensing activities for the past ten years together with a summary of the fees collected.

Fiscal Year	Expenditures
1931	$85,800
1932	128,610
1933	119,533
1934	117,648
1935	123,280
1936	130,316
1937	135,934
1938	143,507
1939	149,491
1940	154,783
1941	151,634

Total expenditures since enactment of Perishable Agricultural Commodities Act $1,440,536.00

Total fees deposited in United States Treasury as of June 30, 1941 ..... 1,883,828.68

Excess of license fees over expenditures 443,292.68

During 1941 license fees totaling $200,883.45 were collected and deposited in the United States Treasury.

Issuance of Licenses - 1941

Licenses in effect at beginning of fiscal year	20,750
New licenses issued during year	5,786
Licenses terminated during year	6,766
Licenses in effect June 30, 1941	19,770

(i) STANDARD CONTAINER ACTS

Appropriation Act, 1942, plus $270 supplemental for within-grade promotions	$10,270
Budget estimate, 1943	10,400
Change form 1942:	
Additional for administrative promotions	+130

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Enforcement of Standard Container Acts	$9,860	$10,000	$10,000	- -
2. Net cost of within-grade promotions	- -	270	400	+$130
Unobligated balance	140	- -	- -	- -
Total	10,000	10,270	10,400	+130

WORK UNDER THIS APPROPRIATION

Objective: To enforce the Standard Container Acts of 1916 (15 U.S.C. 251-256) and 1928 (15 U.S.C. 257-257i). These two Acts regulate the standard sizes of baskets and hampers used in the marketing of fruits and vegetables. The objectives are (1) to afford protection to buyers and consumers by outlawing short-measure containers, (2) to reduce manufacturing costs by eliminating numerous odd sizes and shapes, and (3) to eliminate the unfair competition confronting growers and shippers using full capacity containers from those using deceptive or short-weight containers.

The problem and its significance: There are about 360 manufacturers located in 33 States manufacturing annually about 850,000,000 containers constructed chiefly of green rotary cut veneer. While sizes have been standardized, the details of construction, and methods of manufacture have not, so that while there are only 16 standard sizes applicable to 6 classes of containers, there are actually a minimum of 136 different sizes and styles of containers covered by these Acts. Such diversity naturally increases the chance of unintentional error in manufacturing and the opportunity for wilful manipulation unless operations are persistently checked.

The need for and value of these laws lies in the assurance given the honest manufacturer that he has protection against an unscrupulous competitor; the growers and shippers are assured that baskets from any manufacturer comply with the law; and consumers know that they can buy fruit and vegetables in baskets with confidence that they are protected against short measure.

This legislation has resulted in reducing the number of sizes of berry boxes from 18 to 3, till baskets from 30 to 5, climax baskets from 31 to 4, hampers from 42 to 9, splint baskets from 25 to 6, and round stave baskets from 20 to 9. Since some standard sizes apply to more than one type, the number of sizes of such containers used in marketing of fruits and vegetables has been reduced from approximately 166 to 16.

General plan: The provisions of these Federal Acts are enforced through inspectors who check the measurements of containers at the factories and of samples of containers submitted by manufacturers to the Washington office for testing.

Factory inspections were virtually abandoned in 1941 because the funds for the administration of the Acts were reduced by 50 percent that year. The testing laboratory was maintained in Washington, to which manufacturers submit samples for examination. There were 2,465 samples submitted in 1941 as compared with 6,279 tested in factories and in the laboratory in 1940. Tests were made for 49 percent of all factories during 1941, as compared with 69 percent in 1940. The following table shows the percentage of samples found to be satisfactory upon first examination, those examined in 1941 compared with 1940:

Type of Container	Percentage satisfactory on first test	
	1940	1941
Berry boxes	82	70
Till baskets	63	53
Climax baskets	90	67
Hampers	74	70
Round stave	72	63
Market baskets	80	73

It is significant that with regulatory activities curtailed in 1941 the percentage of samples found to be satisfactory upon first examination dropped sharply from 78 percent in 1940 to 67 percent in 1941.

Under the Act of 1928 it is illegal for a manufacturer to make baskets unless and until the specifications for them have been approved by the Department. The Department has developed standard dimension specifications for 100 containers including in some instances specifications for form and materials. Manufacturers submit specifications and samples of the baskets for approval. If they conform to the specifications and are not deceptive a certificate of approval is issued. During the past 12 years 1,381 certificates have been issued.

Examples of progress and current programs: Specifications During the year specifications were approved and certificates issued for 42 containers, while specifications were revised in 4 other instances, making a total of 46. At the close of the year there were 973 certificates in effect and 165 containers pending certification. The specifications of one container were disapproved as deceptive.

Complaints and investigations: Particularly significant is the fact that in this first year of more limited enforcement the number of complaints requiring investigation increased 83 percent. Of the total number of complaints investigated 82 percent involved short containers and 18 percent other factors.

The 49 actual violations of the Acts during the year, involved 39 manufacturers in 17 States who were technically liable to prosecution. The following table summarizes the technical violations during 1941:

Technical Violations

Number manufacturers involved	39
Number containers too large	27
Number containers too small	15
Number of dimensions out of tolerence	7
Total	49
Number corrected	33
Number discontinued	1
Number pending correction June 30	15

In addition to enforcement and maintenance of standards, the Service has continued to serve as a clearing house for information regarding containers for fruits and vegetables and as an information service for other Governmental Agencies, and the general public.

(j) COTTON QUALITY STATISTICS AND CLASSING ACTS

Appropriation Act, 1942, plus $3,120 supplemental for within-grade promotions	$468,120
Budget estimate, 1943	481,945
Change from 1942:	
Net increase in working funds	+10,000
Additional for administrative promotions	+3,825
Net increase	+13,825

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Grade and staple estimates of the carry-over and the crop	$216,787	$220,000	$220,000	- -
2. Classification and information for groups organized for quality improvement ...	238,645	245,000	255,000	+$10,000 (1)
3. Net cost of within-grade promotions	- -	3,120	6,945	+3,825
Unobligated balance	9,568	- -	- -	- -
Total	465,000	468,120	481.945	+13,825

INCREASE

(1) The increase in working funds of $10,000 in this item for 1943 is to extend the classing service to an estimated number of about 400 additional groups of farmers who will organize during 1943 to promote the improvement of cotton quality.

Objective: Based on the record of previous years, at least 400 additional groups of farmers will organize during the 1942-43 crop year to promote the improvement of cotton quality. This increase is to provide additional personnel required to handle the increased volume of work.

The problem and its significance: The classification of cotton according to grades and staple lengths is a specialized task requiring careful training and several years of experience. Very few cotton farmers can be expected to become skilled enough to class their own cotton accurately, yet it is necessary for farmers to know the quality of their cotton if they are to be in a good bargaining position with buyers. Cotton bales which all look alike to the average cotton farmer may differ in value by more than $20. It is the purpose of this work to furnish directly to farmers a card showing the grade and the staple length of each bale of his cotton, and the prices at which

such grades and staples are selling in nearby central markets, in order that he may be in a more favorable bargaining position and may realize the greatest return from his crop. By knowing the quality of his cotton he is in a better position to get higher prices for the higher qualities, and encouraged to improve his cotton. This program, therefore, should lead to gradual improvement in cotton quality, higher farm income through a more efficient marketing system, better quality goods for the ultimate consumer. In the crop year 1940 more than 1,500,000 bales were classed for organized groups with a membership of over 128,000 farmers. In 1941 almost 300,000 cotton farmers belonged to organized groups and requested the free classing and market news services, and they will submit samples from about 2,250,000 bales for classification under the program. It is expected that at least 350,000 farmers will qualify and request the services for the 1942 crop year. In order for these farmers to obtain full premiums for the improved cotton it is necessary for them to know the classification of their cotton and to have accurate unbiased information on prices and markets.

It costs, conservatively, about 15 cents per bale to class this cotton in large volume. With present funds it is not possible to serve the additional farmers that will organize and request the services for the fiscal year 1943.

General plan: By working closely with the extension service, county agents, and others, farmers are advised of the requirements for organization necessary to secure this service. Farmers desiring the service organize a group, adopt a variety, and elect a representative who makes arrangements for sampling members' bales, receives the necessary supplies, posts market news, and acts for the group in general. Samples are taken from all bales ginned and sent to Government classing offices where they are classified by trained classers and a card showing grade and staple length for each bale is prepared and returned to the grower for use in selling. Group leaders and county agents are visited periodically during the ginning season and given assistance in the interpretation of the information provided and the proper use of the classification service. Records are kept of the grade, staple length and ginning preparation of each bale and summaries are sent to each group at the close of the season for use in measuring the progress of improvement, for deciding as to seed stock for the next crop, and to check on the adequacy of gin equipment and operation.

WORK UNDER THIS APPROPRIATION

Objective: To assemble and make available to all interested parties detailed official information on the grade and staple length of cotton carry-over stocks, and of the crop, and to provide positive encouragement to cotton quality improvement by supplying free classification and market information for growers who are endeavoring to produce better cotton. These services are in accordance with mandatory provisions of the Cotton Grade and Staple Statistics Act approved March 3, 1927, as amended by the Cotton Classing Act approved April 13, 1937.

The problem and its significance: The quality of cotton produced and available from year to year must be known so that production may be more accurately

adjusted and so that farmers may concentrate on those qualities that may be grown and marketed to best advantage. Without such information, maximum effectiveness cannot be obtained in the production and marketing of those qualities of cotton that are best adapted to the needs of the cotton manufacturing industry and to the requirements of ultimate consumers of finished textiles. Cotton quality statistics give an up-to-date picture each season of available supplies and provide a basis for budgeting those supplies, by qualities, on a national scale.

Experience has shown that the quality of cotton tends to deteriorate unless positive steps are taken to improve the crop, and that as a rule local market prices do not fully reflect the spinning value of the higher grades and longer staples. Without higher prices for better cotton, there is little incentive for farmers to plant improved varieties and to adopt other methods designed to improve quality.

General plan: The general scheme of operation is to select cotton gins so located as to represent the quality of cotton produced in different sections of the cotton growing States.

Arrangements are made with these gins to submit samples from each bale as ginned to classing offices in various sections of the belt. The samples are graded and stapled by trained cotton classers and the information thus obtained is used as a basis of estimating the grade and staple length of the entire crop. The grade and staple lengths of cotton in the carryover are obtained by sampling cotton in storage. In 1937 the grade and staple statistics Act was amended to provide for free classification and market news reports in communities organized to promote the improvement of cotton. Thus the organized growers of improved varieties are given information on the quality of individual bales and information that helps them to dispose of their cotton on its merits.

In addition to the data furnished individual producers, information concerning the free classification and market news for organized groups is widely disseminated through the press and radio and through cooperation with the Extension Service. Samples received from such groups are graded and stapled; the necessary classification reports prepared and supplied to the individual growers; and current market news information is supplied to group leaders for dissemination among farmer members. County Agents, group leaders, and cooperating ginners are visited from time to time and assistance is given in the interpretation and use of the classification and market news information. After the ginning season is over, summaries of classification data are furnished all group leaders and county agents in the counties served and releases of a general nature are published.

Examples of progress and current programs:

1. Grade and Staple estimate of the carry-over and the crop:

About 130 separate periodic reports for specified ginning periods were issued in 1940-41 for the several States and districts. The content of these reports

has been materially improved by rearrangement and by the addition of comparable data for the previous season. Ginners, farmers, county agents, and others were furnished information from the classification data obtained in connection with preparing the quality estimates. Their appreciation of the value of this service is indicated by the willingness of ginners to cooperate without compensation. A total of 843 gins cooperated during the year, submitting 713,100 samples for classification.

Information concerning the quantities of the various qualities of cotton available or likely to be available during the season is proving to be of considerable importance in defense planning.

2. Classification and information for groups organized for quality improvement:

This work was first inaugurated in July 1938 and in that year 312 organized groups made application for the free classification and market news reports. In the 1940-41 season the third year of operation, 1,573 groups made application--an increase of 1,261 over the first year. In 1941, 2,501 groups with a membership of 276,747 farmers have filed applications. The total acreage of cotton produced by such members in 1941 has been reported as more than 8,900,000. The rapid growth of this work is shown further in the following table:

Season	Groups		Members		Acreage	
	Number	Percent increase	Number	Percent increase	Number	Percent increase
1938-39	312		18,589		467,667	
1939-40	918	194	64,399	246	1,766,289	278
1940-41	1,573	71	128,216	99	3,860.128	119
1941-42	2,510	60	278,838	117	8,150,714	111

The personnel and organization set-up of the two projects are coordinated so as to utilize fully the resources available for both types of work.

(k) UNITED STATES COTTON FUTURES AND UNITED STATES COTTON STANDARDS ACTS

Appropriation Act, 1942, plus $2,125 supplemental for within-grade promotions	$492,125
Proposed transfer in 1943 estimates:	
To "Salaries and Expenses, Library, Department of Agriculture" (for personnel transferred from cotton library)	-4,400
Total available, 1942	487,725
Budget estimate, 1943	477,483
Change from 1942:	
Net reduction in working funds	-15,000
Additional for administrative promotions	+4,758
Net decrease	-10,242

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Preparation and distribution of official standards	$135,466	$145,600	$145,600	- -
2. Licensing and supervision of licensed classers	92,000	98,000	98,000	- -
3. Classing spot cotton	42,250	47,000	47,000	- -
4. Classifying cotton for delivery on future contracts	122,500	130,000	115,000	-$15,000 (1)
5. Supervision of commercial differences and disseminating market information	60,250	65,000	65,000	- -
6. Net cost of within-grade promotions	- -	2,125	6,883	+4,758
Unobligated balance	37,534	- -	- -	- -
Total	490,000	487,725	477,483	-10,242

DECREASE

(1) The decrease in working funds of $15,000 in this item for 1943 will be met by discontinuing the maintenance of Boards of Cotton Examiners under the Cotton Futures Act at Charleston, South Carolina and Savannah, Georgia. It is never possible to predict the number of bales which may be tendered in any year in settlement of futures contracts. In recent years the classification of cotton for that purpose has been light at these points. Both Savannah and Charleston will continue to be delivery points under the New York Cotton Exchange contract, but such cotton as may be tendered for delivery there will be classed at the nearest classification office.

WORK UNDER THIS APPROPRIATION

Objective: To provide for the administration of (1) the Cotton Futures Act which requires: the establishment of standards for the qualities of cotton; classing of all cotton offered for delivery in settlement of futures contracts; supervision of the quotations of commercial differences in spot markets designated under the Act; and dissemination of information as to market prices and conditions; and (2) the Cotton Standards Act which requires the use of the official cotton standards in all interstate and foreign commerce transactions when cotton is sold according to any standard description. It gives owners or holders of cotton the privilege of submitting cotton to the Department for classing and authorizes the Secretary to examine and license cotton classers. Agreements have been negotiated with the principal foreign cotton-trade associations providing for the world-wide use of the cotton standards.

The problem and its significance: Before the inauguration of cotton standardization work in the Department it was generally recognized that the lack of uniform standards for cotton was detrimental to those concerned with cotton growing, marketing, and manufacturing. Identical grade names were applied in different markets to cotton of different quality and price. The Agricultural Appropriation Act for the fiscal year 1909 contained an item authorizing investigations in cotton standardization and the establishment of permissive standards for nine grades of White cotton.

The enactment of the original Cotton Futures Act in 1914 conferred authority to establish the Official Cotton Standards of the United States and an entirely new set of standards was promulgated. The use of these standards was mandatory only in connection with cotton futures trading. Since their original establishment the standards have been revised and supplemented from time to time under the reenactment of the Cotton Futures Act in 1916 and under the Cotton Standards Act of 1923 which made the official standards the required basis of all transactions in interstate and foreign commerce involving the sale of cotton and linters according to standard description. Both statutes provide for the sale of copies of the standards at prices fixed in the regulations of the Secretary of Agriculture.

This standardization program provides uniform measures of quality for evaluating American cotton and linters for purchases, sales and manufacture; it provides a basis for the cotton market news service, encourages the sale of cotton and linters on a quality basis, and tends to reduce the spread between producers' prices and those paid by manufacturers. The entire program is, therefore, of fundamental importance to cotton farmers in the United States and to all buyers and sellers of American cotton and linters in this country and throughout the world.

With respect to the quality of cotton delivered in settlement of contracts for future delivery, the Cotton Futures Act in its present form provides that all tenders of cotton on futures contract under Section 5 of the Act shall be in accordance with the classification of such cotton made under the regulations of the Secretary of Agriculture by officers of the Government

designated for the purpose, and that fees for such classing service shall be assessed and collected. The volume of classing work is irregular because it depends upon the recurrence of technical conditions in the cotton markets which make it advantageous to deliver actual cotton in settlement of futures contracts. These technical conditions can never be anticipated from season to season. The number of bales classified under the Act have fluctuated from only a few thousand to over 900,000 in a season.

General plan: The work under the two Acts is closely coordinated and divided into five projects as follows:

1. Preparation and distribution of official cotton standards.
2. Licensing and supervision of licensed classers of spot cotton.
3. Classing spot cotton.
4. Classifying cotton for delivery on futures contracts.
5. Supervision of commercial differences and disseminating market information.

Examples of progress and current programs:

1. Preparation and distribution of official cotton standards:

During the fiscal year 1941, 2,651 boxes of the grade standards and 9,485 staple length types were distributed in the United States and foreign countries. Collections amounted to $13,066.50. A total of 129 bales and 612 pounds of loose cotton was purchased for the preparation of copies of the standards, at a cost of $8,847.52.

2. Licensing and supervision of licensed classers of spot cotton:

This project provides for a widespread cotton and linters classing service by persons who are in private employment but who hold licenses from the Secretary of Agriculture under the Cotton Standards Act. An important feature of the work has been its usefulness to cotton growers' cooperative associations throughout the South which have for many years employed licensed classers to determine the quality of cotton received from their members.

A Board of Supervising Cotton Examiners is stationed at Memphis, Tennessee and 12 local supervisors worked under its direction at various points during the fiscal year 1941.

In the fiscal year 1941 a total of 1,026 cotton classers' licenses and 68 linters classers' licenses were outstanding. During the season licensed classers reported the classification of more than 5,600,000 bales.

3. Classing spot cotton:

Currently an important feature of this work is the classing of large quantities of cotton involved in loan programs of the Commodity Credit Corporation and cotton handled by the Surplus Marketing Administration and the Farm Security Administration and that used in the textile mill of the Federal penitentiary at Atlanta, Georgia.

During the fiscal year 1941, some 660,620 samples representing as many bales were officially classed. Collections for classing cotton and linters for the fiscal year amounted to $88,049.70. In addition, 2,725,428 bales intended for the 1940 loan were classified for the Commodity Credit Corporation. Funds were transferred from the Commodity Credit Corporation to cover the cost of this classing job.

Cotton weighing 902,782 pounds and of an approximate value of $79,053.95 was turned over to the Federal penitentiary at Atlanta, Georgia for use in the textile mill. This cotton consisted of samples and rejected portions of bales accumulated in the cotton classing activities and in the standardization work.

4. Classifying cotton for delivery on futures contracts:

Boards of cotton examiners are maintained at the following delivery points: New Orleans, Houston, Galveston, Mobile, Savannah, and Charleston. Reviews are performed by the Appeal Board in Washington or by a committee of the Board at Memphis. Fees at the rate of 25 cents per bale are collected for original classifications and at the rate of 30 cents per bale for reviews.

During the fiscal year 1941, 110,638 bales of cotton were classified for future delivery, and reviewed classifications numbered 26,480. Fees to the amount of $35,243.35 were collected.

5. Supervision of commercial differences and disseminating market information:

An important phase of the work under the Cotton Futures Act is the supervision of cotton quotations in 10 designated spot markets whose commercial differences are used in the settlement of futures contracts. Price quotations are issued daily by exchange committees in such markets. The Agricultural Marketing Service maintains close contact with the committee and a representative visits each market at monthly intervals. Data on prices and market quotations in primary markets and manufacturing centers are also obtained. Market news offices are located in Atlanta, Memphis, Dallas, and El Paso. A Weekly Cotton Market Reivew, based on information received from various sources, is prepared in Washington and telegraphed to the market news offices in the field.

Each office incorporates with the review from Washington a district market news review and widely disseminates this material by mail, press, and radio.

The past year has been marked by increased demands for current market news information, particularly from other Governmental agencies such as the War and Navy Departments, the Commodity Credit Corporation and Office of Production Management. It will be recalled that price ceilings recently announced for numerous manufactured cotton products were tied in with current quotations in the 10 designated markets.

(1) UNITED STATES GRAIN STANDARDS ACT

Appropriation Act, 1942, plus $8,410 supplemental for within-grade promotions	$757,351
Budget estimate, 1943	767,958
Change from 1942:	
Additional for administrative promotions	+10,607

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Administration of the United States Grain Standards Act	$718,464	$748,941	$748,941	- -
2. Net cost of within-grade promotions	- -	8,410	19,017	+$10,607
Unobligated balance	5,477	- -	- -	- -
Total	723,941	757,351	767,958	+ 10,607

WORK UNDER THIS APPROPRIATION

Objective: To provide for the administration of the United States Grain Standards Act approved August 11, 1916. This statute established a national grain inspection service; it provides for official Federal standards the use of which is compulsory when grain is sold by grade in interstate commerce; it provides for licensing inspectors to apply the standards, for supervising their work, for handling appeals from interested parties, and for the administration of certain regulatory provisions designed to prevent fraud and misrepresentation in grain merchandising.

The problem and its significance: The law is mandatory in character, its requirements have been imposed upon producers, dealers, and shippers, and they in turn expect the Department of Agriculture so to conduct its administration of this law that the hazards and losses incident to inspections performed at the various markets shall be reduced to a minimum. This is likewise so in connection with the regulatory provisions designed to prevent fraud and misrepresentation.

Aside from the mandatory requirements for the use of Federal standards, they have been generally adopted and are in use throughout the country in cash and futures trading, warehousing, transportation, financing, price quotations, and export trade. They form a basic, integral part of the marketing of the Nation's grain crops, from the producer through the various channels of trade to the consumer or processor.

General plan: The application of the standards is in the first instance committed to licensed inspectors who are not Federal employees. There are 414 such licensees, together with their sampler assistants, performing inspection service at 178 points throughout the country. The work of these licensees is supervised by the Federal Grain Supervisors located at 44 of the most important grain markets in the country and, in addition, field headquarters offices at Chicago, Illinois and Portland, Oregon.

It is the task of the Federal Grain Supervisors employed under this appropriation to see to it that the official standards are correctly and uniformly applied by all licensed inspectors throughout the country.

In addition this organization is called upon for substantial cooperation and assistance from other branches of the Government engaged in carrying forward the broader agricultural programs. Statistical material gathered in the course of regular work is made available to other branches of the Government through the medium of publications, press releases, and market news reports regarding the quality of the crops, and to producers' organizations and crop-improvement associations interested primarily in improved production and marketing practices.

Examples of progress and current programs: The amendment of the Act on July 8, 1940 to include soybeans necessitated the issuance of 288 licenses. Licensed inspectors performed a total of 1,207,348 official inspections representing 1,944,430,000 bushels of grain. Nearly 46,000 appeals in controversial grading cases were handled. Field stations supervised 189,075 inspections performed by licensees for the purpose of checking the accuracy of such inspections as well as to decide appeals called by producers, shippers, and merchants. This number is slightly less than for the preceding year.

During the year a total of 1,207 samples of musty grain and screenings were examined. Of this number, 961 samples representing that many carloads were declared unfit for mixing. This is 60 percent greater than last year. The program extended to wheat, corn, rye, mixed grain and screenings.

The amendment of the United States Grain Standards Act in July 1940 provided that soybeans be regarded as a grain within the meaning of the statute and that official mandatory standards be promulgated. Standards had been in effect on a permissive basis for several years but the passage of the amendment necessitated a complete revision of the standards which were promulgated under the Grain Standards Act to become effective on September 1, 1941.

During the closing months of the year the entire force at Washington and practically every office in the field were devoting themselves to the furtherance of the Defense Program in the matter of sampling, inspecting, and testing of huge quantities of products purchased by the Surplus Marketing Administration. The additional work has required the stationing of sampling forces at some manufacturing plants 24 hours a day. Aside from the commodities handled regularly, such as grain, beans, rice, etc., it has been necessary to sample and test cornstarch, corn sugar, cracked wheat, rolled oats, corn grits, farina, white flour, graham flour, hard biscuit, fish-liver oil, and ascorbic acid.

Revenue: The revenue for appeal inspections made under the Act during the fiscal year 1941 was $63,606.90. These funds are covered into the Treasury of the United States as miscellaneous receipts.

(m) UNITED STATES WAREHOUSE ACT

Appropriation Act, 1942, plus $3,110 supplemental for within-grade promotions ..	$453,110
Budget estimate, 1943	481,415
Change from 1942:	
Net increase in working funds	+25,000
Additional for administrative promotions ..	+3,305
Net increase	+28,305

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Licensing and supervision of warehouses	$443,317	$450,000	$475,000	+$25,000 (1)
2. Net cost of within-grade promotions	- -	3,110	6,415	+3,305
Unobligated balance	6,683	- -	- -	- -
Total	450,000	453,110	481,415	+28,305

INCREASE

(1) The increase in working funds of $25,000 in this item for 1943 is to provide for increased work incident to the unusual demand for inspection and licensing of warehouses.

Objective: To provide adequate inspection for present licensed facilities and licensing of additional storage facilities (principally cotton and grain).

The problem and its significance: The Federal Warehouse Act provides a nationally supervised system of safe storages for agricultural products. The Act does not require that all warehousemen be licensed but it was intended that the benefits of the Act be extended to all warehousemen requesting a license and who can qualify therefor. As of June 30, 1941, the licensed capacity of cotton storages was 10,162,809 bales, an increase during the past two years of 1,201,293, or about 12 percent. During the same period increase in licensed grain storages amounted to 45,031,510 bushels, or approximately 25 percent. No additional funds were provided for supervision of this increase storage. With the continuation of the Government loan program there is a growing demand for storage facilities and a consequent increase in demand for Federal licenses. The experience of those responsible for the Government loan and

Crop Insurance programs with non-Federally licensed warehouses has been such that they would prefer to store all their commodities in warehouses licensed under the United States Warehouse Act. During the past year limited funds made it necessary to discontinue accepting practically all applications for licenses for grain storage after the first week in August and to refuse to undertake additional work in California involving licensing warehouses for canned foods.

Requests to place additional products on the eligible list are continually received by the Department. Many of these requests have much merit, but it is not felt that additional commodities should be placed on the eligible list so long as demands to serve the commodities now eligible cannot be met. Before such requests can be granted, certain preliminary investigations must be made. For a number of years, no new products have been added to the eligible list because it was not possible to finance the investigational work preliminary to drafting and promulgating regulations and to supervising warehouses that might be licensed to store such products.

General plan: The increase requested will be used largely to supplement the present force of field investigators principally in the cotton and grain areas.

Investigations and subsequent examinations will be made in order to insure enforcement of the law and regulations and to safeguard the interests of patrons. The increase requested, while insufficient to bring the staff up to a desirable level, will permit the employment of 8 additional warehouse examiners and make it possible to render a much improved service.

WORK UNDER THIS APPROPRIATION

Objective: By licensing, bonding, and examining public warehouses, to create a nationally supervised system of safe storage for agricultural products in order (1) to facilitate financing during the marketing period; (2) to avoid losses due to improper storage; and (3) to prevent illegal conversion of the products by persons to whom they were entrusted for safe keeping. Suitable penalties are provided for violations of the Act.

The problem and its significance: In order that the Federal warehouse receipt issued under this Act may always be regarded as sound collateral by loan agencies, federal supervision of licensed warehouses must be sufficiently vigorous and frequent to insure at all times (1) that outstanding receipts reflect truly and accurately the stocks on hand and the weight, grade and quality of the products; (2) that financial responsibility of the warehouseman has not been impaired; (3) that facilities are in proper condition for storing products; (4) that employees serving the warehouse are honest and competent; and (5) that adequate insurance is carried with responsible underwriters.

General plan: The work divides itself into three lines of activity: (1) inspection of warehouses and investigation of warehousemen who apply for licenses. The purpose of this is to determine whether the facilities are adequate and the warehousemen responsible and acceptable for licensing.

(2) supervision of warehousemen who are already licensed to see that they comply with the Act and regulations. This feature of the work represents about 90 percent of the activities in connection with the administration of the Act. Field men are stationed at various field headquarters which serve certain districts. These field men check the operations of the warehousemen within their respective districts. (3) investigating special problems that arise in the regular administration of the Act and in connection with inquiries to place additional commodities on the eligible list.

Examples of progress and current programs: The following table shows the increase in volume of work in the fiscal year 1941 over 1940:

Commodity	Licensed Storage Capacity June 30, 1940	Licensed Storage Capacity June 30, 1941
Cotton	10,048,458 bales	10,162,809 bales
Grain	187,744,220 bushels	224,905,730 bushels
Wool	43,266,420 pounds	36,717,445 pounds
Tobacco	174,161,000 pounds	313,495,400 pounds
Nuts	21,275 tons	22,700 tons
Broomcorn	17,500 bales	15,000 bales
Dry beans	4,049,500 Cwt.	4,124,000 Cwt.
Sirup	317,740 gallons	362,640 gallons
Dried fruit	2,922,000 pounds	2,922,000 pounds
Canned foods	6,138,400 cases	4,456,000 cases
Cold pack fruit	6,915,950 pounds	6,313,950 pounds
Seeds	503,251 Cwt.	617,017 Cwt.
Cherries in brine	10,886,043 pounds	10,511,043 pounds

It was necessary to discontinue acceptance of practically all applications for licenses for grain storage during the first week in August and to refuse to undertake additional work in California involving licensing of warehouses for canned foods.

The greatest increase in licensed storage capacity occurred for grain and tobacco. These increases were due largely to Government loans. This table, however, does not present the whole picture. Licenses must be continued each year and new bonds furnished. During the year 1,281 licenses were continued in effect. During the same period, 35 licenses of warehousemen were permitted by the warehousemen to expire for various reasons. Sixty-one licenses were cancelled, 11 were suspended, and 5 were reinstated during the same period. 166 licenses were issued to warehousemen for the first time. Amendments of licenses were made to 325 warehouse licenses. Licenses were issued to 464 persons to sample, inspect, weigh and grade products stored in licensed warehouses. At the close of June 30, 1941, there were outstanding 1,347 licenses to warehousemen and 3,289 licenses to samplers, inspectors, weighers and graders as contrasted with 1,291 warehousemen's licenses and 3,090 licenses to samplers, inspectors, graders, and weighers as of the corresponding date in 1940.

In supervising licensed warehouses each licensed warehouse operation must be carefully checked several times each year. In a cotton warehouse, for example, each bale represented by an outstanding warehouse receipt must be located in the course of examination; every warehouse receipt outstanding, and all warehouse receipts furnished to a licensed warehouseman must be properly accounted for.

During the year over 13,400,000 bales of cotton were located in the various licensed warehouses and properly associated with warehouse receipts. In the same period more than 7,000,000 warehouse receipts for cotton were cancelled by the field staff after auditing.

Warehouse examiners also accounted for more than 1,500,000,000 bushels of various grains, including about 450,000,000 pounds of rice. Audits of grain warehouses require not only an accounting of all warehouse receipts but also a finding that there is sufficient grain by class, grade, and quantity to support each outstanding receipt. All grain must be carefully checked for condition on each examination.

Receipts during the year amounted to $22,327.00. These funds were covered into the Treasury of the United States as miscellaneous receipts.

(n) FEDERAL SEED ACT

Appropriation Act, 1942, plus $1,400 supplemental for within-grade promotions	$81,490
Budget estimate, 1943	82,890
Change from 1942:	
Additional for administrative promotions.	+1,400

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Enforcement of Federal Seed Act	$82,856	$79,750	$79,750	- -
2. International Seed Testing Congress	250	250	250	- -
3. Net cost of within-grade promotions	- -	1,490	2,890	+$1,400
Unobligated balance	1,894	- -	- -	- -
Total	85,000	81,490	82,890	+1,400

WORK UNDER THIS APPROPRIATION

Objective: To administer the Federal Seed Act in such a manner as to (1) protect farmers and other users of seed from false labeling and advertising in interstate commerce; (2) permit the prompt testing and release, recleaning, or staining of seed offered for importation into the United States; and (3) control the interstate shipment and importation of screenings as required by the Act.

The problem and its significance: The Federal Seed Act of August 9, 1939 requires that agricultural and vegetable seeds shipped in interstate commerce for seeding purposes be completely and correctly labeled. Adequate enforcement necessitates the inspection of seed moving in interstate commerce, the examination of seedsmen's records, and the testing of numerous samples for purity, germination, noxious-weeds, and variety, and investigation of and appropriate action with respect to violations of the Act. The Act also requires that imported agricultural and vegetable seeds meet certain standards, which necessitates sampling all importations and testing the seed for purity, germination, and noxious-weed seed content, and the supervision of staining, recleaning, or destruction of the shipment as the case may require.

With the exception of cereals the bulk of seed planted by farmers is obtained through seed trade channels and a large proportion of such seed moves in interstate commerce. The quality of seed cannot be determined from superficial examination, hence the farmer must rely upon the statements that appear on labels attached to seed offered for sale. The planting of inferior or unadapted seed results in crop losses to the farmer out of proportion to the cost of the seed.

General plan: The work has been organized in the most economical manner possible by using all available facilities. Six field laboratories are maintained in cooperation with State officials at Columbia, Missouri, Lafayette, Indiana, Sacramento, California, Corvallis, Oregon, Fargo, North Dakota and Montgomery, Alabama. Memoranda of understanding with 45 States provide for coordination of State seed law activities with enforcement of the Federal Seed Act. This cooperative arrangement prevents duplication of inspection, makes for more economical administration, and from a long-time standpoint tends to encourage uniformity in State seed laws and enforcement activities. During the 1940-41 legislative session, the legislatures in at least half of the States considered amendments to State seed laws that would result in laws consistent with the suggested uniform State seed law published by the Department of Agriculture in the latter part of 1940.

Samples of progress and current programs:

1. Seed shipped in interstate commerce:

During the course of a year State inspectors, authorized to inspect seeds subject to the interstate provisions of the Federal Seed Act, draw approximately 60,000 samples from lots of seed offered for sale, a substantial proportion of which is for shipment in interstate commerce. Samples and information collected by State inspectors, involving shipments that appear

to be in violation of the Federal Seed Act are forwarded to a Federal or Federal-State laboratory for testing and further investigation. In the fiscal year 1941 a total of 1,500 samples of seed was tested in Federal or Federal-State laboratories for violations of the interstate provisions of the Act. These tests involved 351 cases of alleged violations of the Act. In the majority of these cases warnings were issued; however, seizure of the seed involved, or prosecution of the shipper, was recommended in 22 instances. Criminal action was recommended in seven cases. One was terminated by a plea of "guilty", one by a finding of guilty in three out of four counts, and two by fines of $200 and $100 respectively. Three cases are still pending.

2. Imported agricultural and vegetable seeds:

Foreign and domestic commerce in seeds has been considerably disturbed as a result of the war. This condition is illustrated by the following: Over a period of years substantial quantities, from five to seven million pounds of winter rape seed have been imported annually, chiefly from Japan and the Netherlands. During the past year only 299,000 pounds were imported from Japan and none from the Netherlands. Because of the supply situation and the resulting high prices, over 1,000,000 pounds of rape seed from Argentina were offered for importation. After careful and detailed analysis, this seed, represented by the exporters to be winter rape, was identified as an annual form of rape not suitable for forage purposes. The proper identification of this seed and rejection for entry until correctly labeled saved many United States farmers the unfortunate experience of planting for summer pasture a rape seed which goes to seed two months after planting and thereafter is useless for forage purposes.

During the past year 35,909,729 pounds of agricultural seeds and 1,287,350 pounds of vegetable seeds subject to the Federal Seed Act were offered for importation, of which nearly 1,000,000 pounds were refused importation due to failure to meet the import requirements of the Federal Seed Act. All but 358,737 pounds including both agricultural and vegetable seeds was later released after having been recleaned or otherwise processed to meet the standards required by the Act.

(o) PACKERS AND STOCKYARDS ACT

Appropriation Act, 1942, plus $2,045 supplemental for within-grade promotions	$383,924
Budget estimate, 1943	397,665
Change from 1942:	
Net increase in working funds	+8,121
Additional for administrative promotions	+5,620
Net increase	+13,741

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Enforcement of the Packers and Stockyards Act	$376,785	$381,879	$390,000	+$8,121 (1)
2. Net cost of within-grade promotions	- -	2,045	7,665	+5,620
Unobligated balance	5,094	- -	- -	- -
Total	381,879	383,924	397,665	+13,741

INCREASE

(1) The increase in working funds of $8,121 in this item for 1943 is to provide for additional personnel and expenses incidental thereto necessary for the proper administration of the Packers and Stockyards Act.

Objective: To provide more adequate supervision particularly in the accounting field for the increasing number of stockyards, market agencies and licensees which are required by the Act to be brought under the jurisdiction of the Secretary of Agriculture.

The problem and its significance: This Act requires that all stockyards exceeding 20,000 square feet in area, doing an interstate business, and conducted for profit, shall be posted as coming under its provisions, and that all agencies operating on posted yards be registered and bonded with the Secretary of Agriculture subject to regulations issued by him.

With the decentralization that has occurred in livestock marketing, there has been a constant increase in the number of posted yards, which has resulted in increasing the number of markets assigned to each supervisory district. The appropriation for the enforcement of this statute, $381,879, has remained the same since 1937 when there were 140 posted stockyards. The number of posted yards has grown steadily during the ensuing years until at the present time there are 222 posted stockyards and 8 designated live poultry markets.

The posting of these additional yards with no change in appropriation has been the equivalent of a reduction in the appropriation of approximately $25,000 annually.

There are approximately 6,000 individuals and firms other than packers registered with, or licensed by the Secretary under the provisions of the Act who are required to maintain proper books and records. For this work there are available but 20 accountants, 5 of whom are new men in the Junior grade. In several cases recently there have been financial failures which have occasioned losses to producers and others which has brought criticism on the Department because it has not been possible to make periodic audits of the records to ascertain the financial conditions of the firms before losses were sustained. It is impossible with the present force of accountants to make audits of all registrants and licensees, except at very infrequent intervals.

The rate making work has fallen far behind. Rates have been prescribed for 9 stockyards, and for market agencies at 11 markets. As a result of stockyard and commission rate proceedings already held, it is estimated that from $1,200,000 to $2,000,000 annually has been saved to the producers and shippers in reduced charges made by stockyard companies, market agencies, and licensees. Because of the lack of adequate personnel it has not been possible to initiate rate work at other markets. Requests for modification of the outstanding audits and for increases at other points are frequent and require the full time of more accountants than can be spared from other work. There is every reason to believe that the request for modifications and other rate adjustments will increase, and the agencies and yards for which the Department fixes rates are rightfully entitled to more prompt consideration that it is now possible to give.

With the present funds it is impossible to take on additional employees for this work. The capacity of present personnel to adequately administer the Packers and Stockyards Act at the yards which are now posted, has been exceeded. To continue the posting of stockyards as required under the Act without an increase in the appropriation will result in the further weakening of the supervision of markets already posted to such extent that the interests of the producers and shippers will be endangered. In addition, due to the national emergency and defense efforts, a further financial burden has been imposed on the existing appropriation. In conformity with the decentralization policy in the District of Columbia, approximately twenty percent of the Washington personnel has been transferred to the field, necessitating the rental of commercial quarters at $1,000 per annum, whereas in the District no rental expense was involved. Further, it was necessary to move all of the personnel in one of the larger field stations from quarters in a Federal Building to commercial quarters in order to make room for the Navy Department. This requires an annual expense for rental of $1,750 which was not previously necessary. Therefore, of the additional appropriation of $8,121 approximately $2,750 will be required to cover additional rental expense arising out of conditions beyond our control and will not add to our ability to perform more work. Only $5,371 will be available for the employment of additional personnel and incidental travel which are badly needed to meet the greatly increased amount of work occasioned by the great increase in the number of markets and the conditions which have arisen because of the existing national emergency.

General plan: The increase in funds requested will be used to supplement present field forces for the administration of the Act and to pay increased expenses arising out of the National Emergency and defense activities.

WORK UNDER THIS APPROPRIATION

Objective: To provide such supervision of operations at posted stockyards and designated live poultry markets as will assure that (1) free and open competition is maintained (2) unfair, deceptive, and fraudulent practices are eliminated, (3) accurate weights are given, (4) charges for services rendered are reasonable, (5) a full and correct accounting is made to shippers, and (6) packers do not engage in unfair practices in purchasing livestock or distributing its products in commerce.

The problem and its significance:

The number of yards posted under the Act has increased from 140 in 1937 to 222 at the close of the fiscal year 1941, and the number of registrants and licensees has increased from 5,291 to 5,941 during the same period.

Maximum rates have been fixed at the important large terminal livestock markets by the Secretary or by voluntary action on the part of the yard company and these rates are used as a guide in accepting tariffs filed by other markets. Orders prescribing reasonable commission charges have been issued at ten of the principal terminal markets and five other important markets have voluntarily filed such rates. The number of petitions for modification of existing rate orders and requests for increased rates at markets where no orders obtain are being received with increasing frequency due to increased costs of operation alleged to result from increased wage scales, workmen's compensation charges, Social Security deductions, old-age pensions, various taxes, and other expenses over which the market operators have no control. Proper disposition of these petitions and requests requires detailed examinations and audits of the petitioner's books and records. As a result of stockyard and commission rate proceedings already held it is estimated that from $1,200,000 to $2,000,000 annually has been saved to producers and shippers in the reduced charges made by stockyard companies, market agencies and licensees. Changed conditions ahve absorbed some of these savings but regulation is preventing what would otherwise no doubt be widespread and uncontrolled increases in marketing costs.

General plan: Supervisors with staffs of assistants and accountants are stationed at the principal markets, and supervision is maintained generally over marketing practices and conditions including livestock buying by packers. Complaints are investigated. The investigation includes audits of the books and records of stockyard companies, market agencies and dealers in order to determine matters of solvency and proper accounting for the sale of livestock.

In cases where the violation is of minor importance and the facts warrant, informal disposition of the complaints is made. Such cases include remuneration for lost or crippled animals, or shortages in weights or prices, and the settlement of minor disputes. But in cases where the violation is flagrant, formal proceedings are instituted resulting in orders requiring the offending parties to cease and desist from the violations and in most

flagrant cases their registrations are suspended for specified periods. Complaints by producers, shippers, and others alleging damages as the result of violation of the Act are investigated and if the facts warrant, hearings are held and awards of reparation made to the damaged parties. Complaints are investigated which relate to the conduct of facilities owned or operated by packers where livestock is bought for slaughter. The investigations include practices in weighing, grading, docking and prices of livestock or any other activity in handling and buying livestock.

Investigations are made of the reasonableness of the rates and charges of stockyard companies and market agencies. In the case of stockyard companies the investigation of rates requires the valuation by a staff of engineers of the property and extensive audits of the books and records in order to determine the fair value of the property used in rendering the services and a fair rate of return thereon. In the case of livestock market agencies the investigation requires exhaustive analysis of the books and records of the agencies for the purpose of determining the reasonable costs of rendering the service and the rates prescribed are based upon such reasonable costs.

The Act was amended, effective August 14, 1935, by the addition of Title V relating to live-poultry dealers and handlers. Eight markets serving 16 cities have been found to be such as to warrant designation as live-poultry markets. After a market has been so designated, all persons handling live poultry in interstate commerce therein are required to be licensed. Applicants must furnish a certified balance sheet from which their financial responsibility may be learned, or must establish this fact through open hearings before a representative of the Secretary. There are in effect at present 1,726 licenses.

Examples of progress and current programs: The data below show the increase in the number of posted stockyards, registrants, and licensees over a five-year period:

Fiscal Year	Stockyards Posted	Registrants Operating	Licensees Operating	Total Registrants & Licensees	Packers Reporting
1937	140	4,429	862	5,291	815
1938	166	4,796	1,641	6,437	808
1939	181	4,622	2,197	6,819	815
1940	199	3,958*	1,782	5,740	856
1941	222	4,215	1,726	5,941	938

*A decision rendered by the Circuit Court of Appeals held that packer buyers were not dealers and therefore not required to register. Consequently, the registrations for this class of buyers were allowed to lapse and rendered inactive.

Audits of books and records of market agencies, dealers and order buyers, stockyard companies and licensees have been made during the past five years as indicated below:

Fiscal Year	Routine Stockyards Audits	Market Agency Audits Insolvency and Trade Practice	Poultry Licensee Audits	Total Audits
1937	9	36	209	254
1938	7	59	448	514
1939	11	100	170	281
1940	7	181	180	368
1941	34	184	315	533

Formal dockets handled during the past five years are shown below:

Fiscal Year	Dockets Pending July 1	Net Dockets	Hearings Reopened	Total	Dockets Disposed of	Dockets Pending June 30
1937	32	312*	5	349	200	149
1938	149	276*	17	425	381	61
1939	61	78	2	141	104	37
1940	37	73	8	118	76	42
1941	42	95	1	138	78	60

*The large number of new dockets in 1937 and 1938 resulted from applications for licenses to handle live poultry at designated markets under Title V (enacted in 1935) of the Act.

Of the 95 new dockets instituted in 1941, 17 involved trade practices, 24 reparation, 23 insolvency, 13 bonds, and 18 poultry licenses. Of the 78 cases on which final action was taken, cease and desist orders were issued in 9, cease and desist and suspension orders in 8, a suspension order in 1, dismissals in 18, reparation award in 12, reparation and dismissal in 1, an initial schedule of rates prescribed for stockyard services in 1, market agency rates modified in 1, petition for modification of rates denied in 3, poultry licenses granted in 7, poultry licenses denied in 6, poultry licenses revoked in 10, and an order to keep records issued in 1. During the year 81 hearings were held and 44 examiners' reports served.

In the States of Kentucky, Ohio, and the Virginias, emphasis has been placed on the work at the various auction markets and closer relationships with the operators of these markets have been established. This work has resulted in the elimination of certain undesirable market practices, an improvement in the scale facilities and the weighing of livestock and a more orderly handling of livestock through the auction sales.

At yards originally designed and built as rail receiving points but which now receive the greater part of their receipts by truck, efforts of the Agricultural Marketing Service have resulted in rebuilding and reequipping the facilities for the more adequate handling of trucked-in receipts.

Similarly, yards originally equipped to handle carload lots have been encouraged to replace their carlot weighing facilities with scales more suitable for weighing smaller drafts. These improvements will mean savings to shippers through the reduction of losses by shrinkage, crippling, death, and inaccurate weights.

The practice of weighing up livestock by market agencies has been given special attention, and at a number of yards the practice has been discontinued or reduced to a minimum.

Special attention has been given to the matter of scales and weighing during the year. The installation of balance indicators which permit shippers and others to see that a proper balance is obtained has been encouraged and the use of these indicators has been adopted quite generally on the public markets. Improvements have been made in the scales by the substitution of beams having a ten-pound minimum graduation with beams having five-pound graduations. Scale houses have been remodeled so as to make it possible for patrons and shippers to observe weighing operations easily, and greater emphasis has been placed on the inspection and testing of scales.

(p) NAVAL STORES ACT

Appropriation Act, 1942.....	$34,700
Budget estimate, 1943.....	30,700
Changes from 1942:	
Net reduction in working funds.....	- 4,700
Additional for administrative promotions.....	+ 700
	- 4,000

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Enforcement operations under the Naval Stores Act.....	$19,730	$24,700	$20,000	-$4,700(1)
2. Service operations under the Naval Stores Act.....	9,865	10,000	10,000	- -
3. Net cost of within-grade promotions.....	- -	- -	700	+ 700
Unobligated balance.....	5,105	- -	- -	- -
Total.....	34,700	34,700	30,700	-4,000

Decrease

(1) The decrease in working funds of $4,700 in this item will be met by reduction in expenditure for investigations of possible violations of misbranding and adulteration of rosin and turpentine.

WORK UNDER THIS APPROPRIATION

Objective: To carry out the provisions of the Naval Stores Act of 1923, which provides for the control of the sale in interstate commerce of naval stores (spirits of turpentine and rosin), as well as certain articles sold in competition therewith; the maintenance of an official inspection service for producers and dealers who may wish to avail themselves of the benefit thereof; the establishment of official United States Standards for rosin; and the preparation and loan of duplicate standards to persons engaged in the production, inspection, distribution, consumption, or chemical research work on rosin.

The Problem and its significance:

The inspection of turpentine and rosin by experienced Federal inspectors facilitates the marketing of these commodities by providing the means by which sales can be made on the basis of quality, as well as by preventing violations of the Act and unfair advantages for unscrupulous dealers through misgrading, mislabeling, and other types of deception. The Federal certificates of analysis or of grade are accepted as final in the settlement of disputes that may arise from time to time between buyer and seller as to the grade or purity of the product, or compliance with specifications.

It is estimated that the 1941 production of spirits of turpentine and rosin of all kinds in the United States will amount to approximately 26 million gallons and 1,800 barrels (about 475,000 tons), respectively. Considerable quantities of all kinds of naval stores, including, beside turpentine and rosin, such products as pine tar, pine oil, and pitch, are being purchased and shipped abroad under the Lend-Lease Program. All of these items are subject to inspection and certification by Federal inspectors under the terms of the purchase contracts.

General plan: Samples of turpentine and competing products are collected from shipments that have moved in interstate commerce, from lots arriving at Northern distributing points from the Southern distributing points, or from lots redistributed by the original interstate consignee. These are subjected to chemical analysis and other tests to determine purity, proper identification as to kind, propriety of invoice descriptions and label statements, and conformity with the established standards. Shipments of rosin are likewise sampled and graded to determine the correctness of classification, grading, and marking in accordance with the standards and grades provided under the Naval Stores Act.

Examples of progress and current programs: During the fiscal year 1941 violations of the Act were found in fifteen cases. Two of these were minor infractions, calling only for official warning. Citations or more formal notices of violation were issued on the others. One case of violation of the Act, involving a number of shipments of mislabeled turpentine in cans, on which prosecution had been recommended, was terminated by a conviction and fine of $5000.

One important new phase of the service work was the taking over of practically all rosin inspection operations at the important markets and concentration points. This came as a result of the provisions under which the Commodity Credit Corporation made loans in 1941 to producers who put up Federally graded and certified rosin as collateral for loans.

The inspection and certification of rosin on which Commodity Credit loans have been predicated, total, for the eight months of the 1941 season, April to November inclusive, about 290,000 drums, amounting to approximately 32 percent of the total quantity of gum rosin produced during that period.

In addition to these inspections the certification work under the Lend-Lease Program have covered approximately 51,500 packages of naval stores during the period August - November, 1941.

The inspection and certification service was also rendered on more than two hundred lots of turpentine, both for domestic distribution and export.

(q) INSECTICIDE ACT

Appropriation Act, 1942, plus $2070 supplemental for within-grade promotions	$170,250
Budget estimate, 1943	171,715
Changes from 1942:	
Net reduction in working funds	- 180
Additional for administrative promotions	+ 1,645
Net increase	+ 1,465

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Enforcement of the Insecticide Act	$189,596	$168,180	$168,000	-$180(1)
2. Net cost of within-grade promotions	- -	2,070	3,715	+1,645
Unobligated balance	3,584	- -	- -	- -
Total	193,180	170,250	171,715	+ 1,465

DECREASE

(1) The decrease in working funds of $180 in this item for 1943 will be met by a curtailment of purchases of supplies.

WORK UNDER THIS APPROPRIATION

Objective: This appropriation is for the enforcement of the Insecticide Act of 1910, which prohibits the importation or shipment in interstate commerce, or the manufacturing in the District of Columbia or the Territories of misbranded or adulterated insecticides and fungicides, thereby protecting farmers and other users of such products from the purchase and use of materials which not only may be worthless for the purpose intended, but may actually injure the orchard or crop to which applied.

The problem and its significance: There are about 15,000 different insecticides and fungicides on the market, the larger portion of them going into interstate commerce. Under normal conditions several hundred new products appear on the market annually so that it is a constantly changing field. Under present defense conditions even greater changes will occur due to possible substitutions as a result of shortages of materials, such as copper, arsenic, mercury and chlorine, which are necessary in the production of the most largely used insecticides and fungicides. Shortage in shipping space

will curtail the importation of important insecticides such as pyrethrum, derris root, and cube root and result in the substitution of new and untried products for those which have become standard for plant protection. The adulteration of products is likely to be increased. This, plus the fact that farmers are being called upon for greater production of food supplies despite a shortage in farm labor makes it imperative that every effort be taken to see that the insecticides and fungicides on the market are properly manufactured and labeled.

The field covered by this Act includes insecticides and fungicides used in protecting fruits, vegetables, and field crops from insects and disease; insecticides for use against insects attacking man and other animals; household insecticides for use against such insects as houseflies,, moths, mosquitoes, roaches, ants, and others; seed and soil-treating material used for controlling seed-borne diseases of plants; and disinfectants used in preventing the spread of communicable diseases of man, farm animals, and pets, as well as disinfectants for dairy and food establishment equipment.

While retail sales of insecticides, plant fungicides and disinfectants exceed $100,000,000 annually, these products are used to protect crops and animals worth several billion dollars. Entomologists of the Bureau of Entomology and Plant Quarantine have estimated that the insect damage to crops alone in this country amounts to $2,000,000,000 annually, and plant pathologists state that equal losses are sustained from plant diseases. The assurance of the quality of insecticides and fungicides is particularly necessary at the present time because of the shortage of man power and the vital importance to the country of its agricultural products.

General plan: To determine whether insecticides and fungicides are in compliance with the law, samples are taken from interstate or import shipments and subjected to thorough analyses and tests. In many cases these tests involve extensive field tests by the entomologist or plant pathologist or both. Disinfectants sold for use in preventing the spread of communicable diseases of man and animals must be tested by the bacteriologist.

Methods of analysis for the standard types of insecticides and fungicides are available, but many of the newer materials are highly complex mixtures and new methods of testing must be developed. Adequate field methods must also be developed for testing insecticides, plant fungicides, and disinfectants. It is also necessary to determine which ingredients of insecticides and fungicides are active, for the purposes intended, and which are inert, since the law requires a label statement of the composition in cases where an inert ingredient is present.

Examples of progress and current programs: Each year it is the endeavor to examine samples of the major agricultural insecticides which are marketed in large quantities and which are likely to cause injury if improperly made, as well as samples of new products that are placed on the market. During recent years an average of nearly 500 new products a year have been examined. In view of the probable increase in number of suchproducts and since violations are more frequent among them, the necessity of giving them thorough attention during the coming year is evident.

Of the 2,000 samples examined last year 17 percent were found to be misbranded or adulterated. In many cases the misbranding was not of a particularly serious nature and prompt correction of the labeling was obtained from the manufacturer, but 44 cases involved prosecution of the manufacturer, or removal of the product from the market through seizure. 29 criminal prosecutions involving 46 different products for violation of the Insecticide Act were terminated during the year in the Federal courts by pleas of guilty or nolo contendere, or by verdicts of guilty after trial. Fines ranging from $25 to $600 were imposed in these cases. No decision adverse to the Government was rendered.

(r) FARM PRODUCTS INSPECTIONS? AGRICULTURAL MARKETING SERVICE (TRUST ACCOUNT)

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)
Inspection and grading of farm products under cooperative agreements(obligations).....	$618,978	$550,234	$555,897

WORK UNDER THIS APPROPRIATION

This schedule covers the trust-funds arising out of forum products inspections by the Agricultural Marketing Service.

Under authority of the Agricultural Appropriation Act, the Secretary of Agriculture provides an inspection and grading service for farm products upon the application of an interested party. This service is supported in part by the appropriation "Salaries and Expenses, Market Inspection of Farm Products", and in part by fees charged for the services. These fees are covered into the Treasury as a special trust fund and are appropriated and made available for the payment of refunds and expenses in connection with the work provided for under cooperative agreements.

(s) COMMODITY CREDIT CORPORATION, CLASSIFICATION OF COTTON, (AGRICULTURAL MARKETING SERVICE) (TRUST ACCOUNT)

PROJECT STATEMENT

Project	1941	1942 (estimated)	1943 (estimated)
Classification of Cotton for Commodity Credit Corporation (Obligations)	$458,119	$300,397	$300,397

WORK UNDER THIS APPROPRIATION

This fund is advanced by the Commodity Credit Corporation and appropriated for the classification of cotton, according to agreement between Agricultural Marketing Service and Commodity Credit Corporation, by specialists in cotton classing employed by Agricultural Marketing Service in connection with loans made by the Commodity Credit Corporation under the provisions of Section 302 of the Agricultural Adjustment Act of 1938, as amended.

SUPPLEMENTAL FUNDS

(Complete Bureau Statement)

(1) Direct Allotments

Projects	Allotments, 1941	Estimated allotments, 1942	Estimated allotments, 1943
Working Fund, Agriculture, Agricultural Marketing Service (Advance from Census Bureau): For statistical and other services in connection with the 1940 Census of Agriculture...	$30,000	- -	- -
Working Fund, Agriculture, Agricultural Marketing Service (Advance from Subsistence of the Army, War Department) Inspection of processed foods.....	17,000	$181,910	$181,910
Incidental Expenses of the Army (Transfer from War Department): Inspection of hay and supervision of Army hay inspectors /.....	3,250	3,250	3,250

Projects	Allotments, 1941	Estimated allotments, 1942	Estimated Allotments, 1943
Special Research Fund, Department of Agriculture: Special researches on the marketing of farm products.....	84,420	66,835	57,950
Working Fund, Agriculture, Marketing Service, Advance from Commodity Credit Corporation Capital Fund: For the conduct of investigations of methods of caring for grain in storage.....	- -	5,000	- -
Salaries and Expenses, Agricultural Adjustment Administration: Estimates and reports on fruit and vegetable crops, special services in connection with standards for canned fruits and vegetables; prices and parity computations.....	135,000	105,000	- -
Salaries and Expenses, Veterans' Administration (Transfer to Agriculture) (Agricultural Marketing Service).....	45,000	47,200	47,200
Conservation and Use of Agricultural Land Resources, Department of Agriculture: Crop production data required by the Agricultural Adjustment Administration as a basis for determination of acreage allotments, normal yields and marketing quotas.....	130,000	150,000	150,000
Parity Payments, Department of Agriculture: Crop production data required by the Agricultural adjustment Administration as a basis for determination of acreage allotments, normal yields and marketing quotas; priced and parity computations.....	100,000	110,000	110,000
Federal Crop Insurance Act, Department of Agriculture: Gathering and compiling production statistics and furnishing daily price quotations	21,900	26,375	26,375

SUPPLEMENTAL FUNDS (Continued)

(Complete Bureau Statement)

(1) Direct Allotment

Projects	Allotments, 1941	Estimated allotments, 1942	Estimated allotments, 1943
Exportation and Domestic Consumption of Agricultural Commodities, Department of Agriculture: For classing, inspecting and grading services under the provision of regulations governing the export, diversion and relief programs, and for statistical services in connection with the agricultural adjustment program	96,358	81,500	182,500
Emergency Fund for the President, National Defense (Allotment to Agriculture) (Agricultural Marketing Service): For expenses of moving investigation and audit unit of the Packers and Stockyards Division to Kansas City, Missouri	- -	3,597	- -
Emergency Relief Appropriation Act:			
Farm employment survey	168,450	- -	- -
Administrative expense	7,104	- -	- -
Planning and review of W.P.A. projects	- -	6,420	- -
Total, Emergency Relief Appropriation Act	175,554	6,420	- -
Total supplemental funds (direct allotments)	838,482	787,087	759,185

PASSENGER-CARRYING VEHICLES

The authorization for purchase of passenger-carrying vehicles for the Agricultural Marketing Service for the current fiscal year is $45,900, including $44,400 authorized in the Agricultural Appropriation Act for fiscal year 1942 and $1,500 authorized in the Second Deficiency Appropriation Act of 1941. A lesser number of cars is included in the estimates for the fiscal year 1943 with a corresponding decrease in the amount of the authorization requested. It has been the practice of the Agricultural Marketing Service in the past and continuing through the fiscal year 1942 to exchange approximately 25 percent of our passenger-carrying automobiles annually. Our cars travel from 10,000 to 14,000 miles per year on an average and will accumulate mileage in excess of 40,000 miles recorded during the four-year period.

SUPPLEMENTAL FUNDS (continued)

(Complete Bureau Statement)

(1) Direct Allotment

Projects	Allotments, 1941	Estimated Allotments, 1942	Estimated Allotments 1943
Exportation and Domestic Consumption of Agricultural Commodities, Department of Agriculture: For classing, inspecting and grading services under the provision of regulations governing the export, diversion and relief programs, and for statistical services in connection with the Agricultural adjustment program.....	96,358	81,500	182,500
Emergency Relief Appropriation Act:			
Farm employment survey.....	168,450	- -	- -
Administrative expense.....	7,104	- -	- -
Planning and review of W. P.A. project	- -	6,420	- -
Total, Emergency Relief Appropriation Act.....	175,554	6,420	- -
Total supplemental funds (direct allotments).....	838,482	787,087	759,185

PASSENGER-CARRYING VEHICLES

The authorization for purchase of passenger-carrying vehicles for the Agricultural Marketing Service for the current fiscal year is $45,900, including $44,400 authorized in the Agricultural Appropriation Act for fiscal year 1942 and $1,500 authorized in the Second Deficiency Appropriation Act of 1941. A lesser number of cars is included in the estimates for the fiscal year 1943 with a corresponding decrease in the amount of the authorization requested. It has been the practice of the Agricultural Marketing Service in the past and continuing through the fiscal year 1942 to exchange approximately 25 percent of our passenger-carrying automobiles annually. Our cars travel from 10,000 to 14,000 miles per year on an average and will accumulate mileage in excess of 40,000 miles recorded during the four-year period.

Due to the apparent future shortage of automobiles to take place as a result of the National Defense program and the anticipated increased price of automobiles during the fiscal year 1943, and continuing during the emergency this Service has decreased its authorization and is requesting replacement of 65 passenger-carrying automobiles in lieu of the usual annual turnover of 80 such cars. The policy being established by the Agricultural Marketing Service with reference to the exchange of motor vehicles, effective in the fiscal year 1943, restricts the exchange of passenger-carrying automobiles within the following limitations: six year of age; five years of age and over, 40,000 miles; four years and over 50,000 miles; three years with 60,000 miles and over. The mileage and age requirements established will materially increase our repair and maintenance costs, as these automobiles are operated throughout the year under practically all conditions of use, ranging from city streets to very rough country roads.

The net average replacement cost, delivered at point of destination, is estimated to be $625.00 per car when exchange allowances are taken into account. To purchase the number of cars needed for the fiscal year 1943 will require an authorization in the amount of $40,625.00.

The use of passenger-carrying cars is necessary for the efficient conduct of the field work of the Agricultural Marketing Service. Inspectors and graders must move quickly between markets, warehouses, and railroad yards which are often relatively inaccessible by usual methods of transportation. In most cases it is not possible to obtain the necessary transportation quickly enough to enable employees to conduct their work without much loss of time. In the case of the market news service, speed is the essence of the service, and where several markets must be covered the work cannot be done without the use of a car.

BUREAU OF HOME ECONOMICS

SALARIES AND EXPENSES

Appropriation Act, 1942:	
"General administrative expenses"	$31,735*
"Home economics investigations"	301,310*
Second Supplemental National Defense Appropriation Act, 1942	20,000
Supplemental for within-grade promotions	3,485
Total available, 1942	356,530
Budget estimate, 1943	368,890
Change from 1942:	
Increase in working funds	8,955
Additional for administrative promotions	3,405
Net increase	12,360

*The Budget estimate proposes consolidation of the two appropriation items in order to simplify accounting and other operations. Since the bureau has only the one appropriation, namely "Home Economics investigations" for its subject matter work and the entire staff, including those paid from the appropriation entitled "General administrative expenses" is engaged in work directed towards the overall objectives of the Bureau, the distinction between the two items is difficult to maintain and causes some confusion and difficulty in carrying out the program which should be rectified by the proposed consolidation.

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Foods and nutrition investigations	$86,388	$94,323	$96,323	$2,000 (1)
2. Family economics investigations .	81,642	94,402	98,357	3,955 (1)
3. Textiles and clothing investigations	103,865	107,010	107,010	- -
4. Housing and household equipment investigations	26,485	28,105	28,105	- -
5. Home economics information	24,165	29,205	32,205	3,000 (1)
6. Net cost of within-grade promotions	- -	3,485	6,890	3,405
Unobligated balance	500	- -	- -	- -
Total	323,045	356,530	368,890	12,360

INCREASES OR DECREASES

(1) The increase of $8,955 in projects 1, 2, and 5 consists of:

(a) A decrease of $605 due to anticipated economies resulting from the consolidation of the two subappropriations.

(b) An increase of $9,560 for intensification of the Bureau's nutrition program to meet defense needs. This estimate represents the projection on a 12 months basis for 1943, of the amount ($20,000) provided as a supplemental appropriation for 1942.

[illegible]

[illegible]

[illegible]

Objective: To intensify the nutrition research program and to assist the work of organizations concerned with improving national nutrition by focusing accumulated findings upon immediate problems of feeding armed forces and civilians.

The problem and its significance: Unprecedented demands have come to the Bureau of Home Economics for food and diet information from such agencies as the National Advisory Committee of the Coordinator of Nutrition for Defense, from State and local nutrition committees, from the Office of Price Administration, and from educational organizations and homemakers. Work under this project includes the focusing and adjusting of research data on food needs and consumption habits so as to assist in solving dietary problems of the armed forces and civilian groups as they arise and to interpret the results to administrators, educational groups, and the public.

Plan of work: With the rapidly changing food supply and price situation, it is important that information is assembled and released periodically indicating the dietary adjustments necessary in light of food supplies available for domestic use. These releases will bring together in convenient form for use by State and local workers pertinent data on nutrition and food supplies now unpublished or widely scattered in numerous Government and State reports. The material will be distributed to all organizations concerned with the national nutrition program and is needed in their work of helping families translate scientific knowledge of food values and human requirements into satisfying meals that are within their economic resources.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored, deleted matter enclosed with brackets):

[SALARIES AND EXPENSES]

Salaries and Expenses, Bureau of Home Economics-

[General administrative expenses: For necessary expenses for general administrative purposes, including the salary of Chief of Bureau and other personal services in the District of Columbia, $31,735]

[Home economics investigations] Salaries and expenses: For necessary expenses, including not to exceed $163,481 for personal services in the District of Columbia, of the Bureau of Home Economics, for conducting either independently or in cooperation with other agencies, investigations of the relative utility and economy of agricultural products for food, clothing, and other uses in the home, with special suggestions of plans and methods for the more effective utilization of such products for these purposes, and such economic investigations, including housing and household buying, as have for their purpose the improvement of the rural home, and for disseminating useful information on this subject, including the employment of persons and means in the District of Columbia and elsewhere, [$301,310] $368,890

[Home economics investigations: For an additional amount for home economics investigations, fiscal year 1942, including the objects specified under this heading in the Department of Agriculture Appropriation Act, 1942, $20,000, of which not to exceed $19,000 may be expended for personal services in the District of Columbia.]

[Total, Salaries and Expenses, Bureau of Home Economics, $333,045, of which amount not to exceed $152,592 may be expended for personal services in the District of Columbia.]

This revision does not broaden the language but merely restates it to provide the present authority under one appropriation item, as explained above.

WORK UNDER THIS APPROPRIATION

Objective: Information for home and nation: As changes in our war-time economy affect the homemaker in her use of food and other consumer goods, the Bureau of Home Economics must supply scientific information to help this nation and its homes in meeting the situation; and to attack or continue work upon special war as well as postwar problems in food and nutrition, clothing and textiles, housing and household equipment, and family economics.

The problem and its significance: Pressing and vital: The Bureau must supply the basic information making possible a war-time nutrition program on a nation-wide scale, with plans continuing into postwar food use. This involves the issuing of diet plans keyed to the yardstick of good nutrition at all income levels for immediate use of American families. Studies in food preservation and conservation for the war effort should be pushed forward rapidly. As never before, armed forces and civilian population need to have in handy, useable form all possible facts resulting from vitamin studies, and from studies of food composition. Rural families need aid toward producing more of their food and other living needs on the home acres. Standard budgets are needed to help families meet rising costs.

For the armed forces, there is urgent need to study various means of treating clothing to protect against infestation and contamination; to find cheaper chemicals for mildew-proofing tents, sailcloth, sandbags. To conserve present textile supplies, the civilian population needs authentic information on daily care of clothes; make-over and mending helps; buying guides; substitute possibilities. More designs for war workers' clothing suited to the job to be done should be worked out.

Due to war limitations on new housing and new equipment, all possible help must be given to conserving present home equipment and to make best use of existing household space. Studies on care and use of such equipment and on minimum kitchen standards offer much help now, will provide more. As fast as substitute materials come on the market, they must be tested out from the consumers' standpoint. Defense housing agencies as well as the general public need to be furnished advice on constructing the home as a working plant, with greatest possible conservation of human energy and of the financial investment.

General plan: Scientific research and popularization: In this Bureau, research as usual ended months ago, and long-time research was redirected to serve war and postwar purposes. Much of this emergency work is in close cooperation with Army, Navy, Red Cross and the Surplus Marketing Administration food supply program. In scientific laboratories, technicians and analysts find out the facts, which are then disseminated to the Nation by every modern means.

Examples of progress and current programs:

Foods and nutrition investigations: Modern war takes a special toll on human stamina. But there is a special weapon to meet this toll--modern nutrition, with its great discoveries of what vitamins will do to build up health and strength.

Food is the greatest single factor in building and maintaining fighting forces and civilian population. The national problem is not merely to supply enough food, but also to supply foods with the right food values.

On the basis of nearly twenty years experience in advancing the science of human nutrition, the Bureau of Home Economics now is supplying the needed information for planning a war-time nutrition program on a national scale. In addition, Army, Navy, American Red Cross, and the purchasing agencies of our allies, have asked, and are being supplied with, a vast array of scientific food facts of indispensable value in a war economy.

One of the most valuable tasks of the past year was the gathering together into a single publication, now in press, a complete summary of the world's scientific literature on vitamin values. This reports all available data in terms of absolute weight of the vitamins, and when possible gives effect of cooking or porcessing procedure on vitamin values.

Vitamin A protects from nutritional night-blindness the fighting forces on night duty, and civilian populations needing to conduct necessary tasks during blackouts.

When the Bureau's work on Vitamin A started, nobody knew how much of this vitamin was needed by the human body. Now that fact in terms of International units, has been established through the Bureau's research. Though it was known also that this nutrient could be stored in the liver for use by the body when supplies ran low, nobody knew how much could be stored, nor how rapidly, nor how fast such stores would be depleted if drawn upon. These points are now being studied with human beings as volunteers as well as with colonies of experimental animals. The trend of this experiment indicates that final results will show the need for gradual feeding over a long time, rather than big, quick doses. Tests show that carotene, the "mother substance" of Vitamin A, as derived from peas and spinach, are not as effective as pure Vitamin A or pure carotene in preventing night blindness. Due to the war, the supply of Vitamin A from fish liver oil is becoming limited. The nation needs to know all the facts about Vitamin A in ordinary foods.

Findings on vitamin values of raw foods is opening up a new field to the farmer -- growing foods for their food values. Methods of cutting down wastes in food values, even the unseen wastes in vitamins which occur while the food is on its way from farm to dining table, must be speedily made available to food producers,

processors, and consumers. The Bureau of Home Economics has assembled much information, is constantly making new discoveries of vitamin and mineral losses through natural deterioration of fresh foods, and through the ordinary ways of processing, storing and cooking.

Dehydration is one of the war-time fields of food processing in the effort to use this country's foodstuffs to their greatest economic advantage. A special appropriation has enabled the Bureau of Home Economics to test the nutritive value of foods before and after the drying process. Already in cooperation with the American Red Cross in its refugee program abroad, with the Surplus Marketing Administration in its handling of supplies for our allies, and with our own defense forces in developing emergency rations, the Bureau of Home Economics has tested out over three hundred dehydrated food products, and is continuing such tests. These include soups, potato flakes, eggs, vegetables, and fruits, and concentrated packs for complete emergency rations. The Bureau reports food composition, judges taste, quality and appearance, and recommends changes if it is thought the product might be improved.

These studies of dehydrated foods have opened up new possibilities for home and community preservation of foods by drying, as an aid to the war effort. Other tests open up new possibilities of quick freezing and of storage of root vegetables as means of conserving foods. Cutting off of metals makes it necessary that other avenues of food preservation than canning be thoroughly investigated, since no metals means no more pressure cookers. Only by steam pressure can non-acid meats and vegetables be canned safely. Other methods offer grave dangers of food poisoning.

Not only preventing all possible food waste, but helping the housewife and community feeding projects to provide greatest possible food value at the least possible cost is the purpose of many cookery projects continuously underway in the Bureau laboratories. For example, the Bureau's large-scale, low-cost recipes worked out for school lunch projects would be immediately practical for mass feeding in an emergency situation.

Family economics investigations: War causes heavy demands for raw materials, plant capacity and labor for the production of armament, thus curtailing greatly the supplies of consumer goods. And because war calls for more active work, longer hours, and often increased exposure, the food and clothing requirements of both the military and civilian population are increased also. Marked readjustments in family budgets must follow the consequent scarcity of some goods and increases in living costs and taxes. The Family Economics Division is directing its work to give more help to homemakers along the line of family financial planning.

Standard budgets are being prepared that correspond to several levels of living. Such materials were in great demand in World War 1 because they are useful in many policy-making or administrative situations, such as in measuring the amount of assistance destitute families need or as a basis for wage negotiations, for determining the relative cost of living in rural communities--information of particular value in plans for decentralizing industry. In recent years standard budgets for many purposes have been called for, but up to now--prior to the completion of special tabulations made of data from our recent large scale study of

consumption by income (Consumer Purchases Study)--the basic data for preparation of valid budgets had been lacking. Work is proceeding along these lines.

With the completion of nation-wide surveys of food consumption we now know the chief points at which diets of various population groups should be reinforced from the standpoint of improving nutrition. Diet plans at various cost levels are being developed. Our food plans interpret the new dietary recommendations announced at the 1941 National Nutrition Conference in terms of food groups, and are flexible enough to be readily adapted to regional and family food preferences and national and local food supplies.

Studies also are being made of the nutrition of populations under stress of war and poverty. The Department's programs of surplus food disposal have done much to relieve the stress of poverty in this country. A report has been completed of the effect of the 5-cent milk program on diets of families unable to buy much milk at regular prices, and preliminary reports on sample studies have been issued showing the effect of the food stamp plan and the school lunch program on diets of low-income groups. Work on a broader scale is in progress in cooperation with the Surplus Marketing Administration. These studies will indicate the magnitude of the potential domestic market for agricultural products among low income groups and show the possibilities of dietary improvement through special food distribution programs. These facts will have special significance for any food-control that may become necessary during the war, and for postwar planning.

Textiles and clothing investigations: War always necessitates the more economical use and care of clothing and household fabrics as textile supplies become scarce. New lines of work also bring the need for new kinds of clothes designed to facilitate that work. The Division of Textiles and Clothing has therefore during the past year shifted the emphasis in its program to give more service to homemakers along these lines.

For example, the Bureau has designed work garments suitable for the increasing number of women and girls doing outdoor farm labor and going into defense industries and other war work. These garments are having nationwide acceptance, and pattern and garment manufacturers are featuring them throughout the country. In fact, the Bureau's studies have been the basis for an entirely new American industry -- developed during the past six months -- the manufacture of defense work clothes for women.

The Bureau is also giving homemakers assistance in meeting the increasing need for production of clothing at home. More home sewing becomes necessary when factory workers shift to defense industries and family incomes are strained by rising prices. For example, coats represent such a large outlay of money and are so important in maintaining health that many State extension and other agencies are establishing schools to teach women how to make warm coats for themselves and their children. The Bureau is preparing bulletins, posters, and other educational materials for use in these and similar home sewing classes of farm and urban women.

Consumers' buying guides for clothing and household fabrics are being given particular attention because of the rising prices of such household goods. Higher prices mean increased need for helping homemakers evaluate market offerings of clothing and household textiles in order that they may protect themselves against degradation of quality and make the wisest choices possible. Fabric specifications are

being developed and additions made to the series of popular publications on buying. For example, specifications for work garment fabrics and points to look for when buying boys' suits have recently been prepared for the guidance of homemakers.

Over 150 designs developed by the Bureau for women's full-fashioned cotton hose were ready for release to the trade when further silk imports were barred in the summer of 1941. These are being used widely by the industry and are being developed rapidly into a dictionary of hosiery designs for distribution to important hosiery manufacturing centers. Studies are now being emphasized looking toward the use of shorter staple lengths of cotton and the chemical treatment of cotton yarns to increase their strength and smoothness. Parallel with the designing of the hose are laboratory tests on rub at heel and toe, elasticity and other qualities that make for satisfactory wear. Also serviceability tests are being made through the cooperation of nurses in Washington institutions interested in cotton hose for the use of the nursing services.

A new field of investigation has been stimulated by requests from the military services --the role of various micro-organisms in cotton damage. The work of the Bureau on the protection of household articles from such damage has been found applicable to tents, tarpaulins, sandbags, and other military goods. Mildewproofing processes have been developed by the Bureau and released under public service patents. More research is under way on which to base other methods of reducing this loss and obtaining better service from our cheapest and most abundant textile fiber.

Housing and household equipment investigations: With war necessities preempting metal supplies and the manufacture of household equipment and durable goods for consumer use cut to a minimum, the homemaker faces new problems in the efficient operation of the home plant. The housing and household equipment investigations in the Bureau of Home Economics are therefore being redirected to furnish scientific facts on the economical operation of refrigerators, washing machines, stoves, and other equipment, so as to prolong the life of existing units, conserve fuel energy, and prevent waste of food, textiles, and other household supplies. Minimum standards for efficient kitchens for families of different sizes in various income groups are being developed for the use of agencies building housing units for defense workers.

As fast as substitutes for metals for use in household equipment are released by the trade, they are tested in the Bureau's laboratories and information furnished to both consumers and producers. For use in community feeding projects under emergency conditions plans for home-made fireless cookers and other needed equipment are being developed.

Home economics information: Our democratic way of life can be maintained only if every home is a conscious working unit in our present supreme effort for survival. To maintain health, family morale, efficient operation of the household so as to release labor for volunteer and paid jobs in the community, homemakers need every available fact on scientific homemaking. The information services of the Bureau of Home Economics are therefore being planned on a wartime basis. Older publications of importance in national emergency are being revised, new ones prepared as handbooks for home and community projects.

Charts and other forms of visual material are being developed for the use of extension workers and teachers. Radio broadcasts by staff members over national networks and radio scripts for broadcast by local stations are planned to carry home economics information directly to homemakers in the quickest possible time.

In short by printed word, spoken word, and picture the homes of the nation will be given every helpful fact stemming from the Bureau's research.

SUPPLEMENTAL FUNDS

Direct Allotments

Projects	Allotments, 1941	Estimated allotments, 1942	Estimated allotments, 1943
Emergency Dehydration Investigations: Investigations of the effect of dehydration processes on the quality, uses and nutritive value of foods	---	$74,000	---
Special Research Fund:			
Vitamin A storage and reserves: an attempt to define optimal vitamin A intake: effect of processing on vitamin content of foods and nutritive values of foods	10,000	20,000	20,000
Investigation of the effect of heat on the thiamin (vitamin B_1) present in foods in different forms and in conjunction with different constituents present in natural foods	7,500	- -	- -
Within-grade promotions--net cost.	- -	135	- -
Total, Special Research Fund	17,500	20,135	20,000
Liquidation and Management of Resettlement Projects: For the testing of textile materials which are sold on resettlement projects	3,200	3,200	3,200
Salaries and expenses, Agricultural Adjustment Administration: Study of the utilization of surplus agricultural commodities	5,000	5,000	---

SUPPLEMENTAL FUNDS - Continued

Direct Allotments - Continued

Projects	Allotments, 1941	Estimated allotments, 1942	Estimated allotments, 1943
Exportation and Domestic Consumption of Agricultural Commodities: Study of the utilization of surplus agricultural commodities, (with special reference to the Food Stamp Plan)	16,000	15,000	20,000
Emergency Relief, Agriculture, Administrative Expenses (transfer from W. P. A.):			
Administrative expenses in connection with emergency relief projects	5,181	---	---
Emergency Relief, Agriculture, Home Economics, Federal Non-Construction Projects (transfer from W.P.A.):			
Study of the physical structure and growth of children	70,728	---	---
Study of budgeting family resources	$56,500	---	---
Total, Emergency relief projects	127,228	---	---
TOTAL, Supplemental funds (Direct allotments)	174,109	117,335	143,200

ENFORCEMENT OF THE COMMODITY EXCHANGE ACT

Appropriation Act, 1942, plus $6,765 supplemental for within-grade promotions	$632,765
Budget estimate, 1943	639,587
Change from 1942:	
Additional, for administrative promotions	+ 6,822

PROJECT STATEMENT

Projects	1941	1942 (estimated)	1943 (estimated)	Increase or decrease
1. Market designation and broker registration	$29,755	$34,301	$34,301	--
2. Supervision of futures trading.	255,853	258,913	258,913	--
3. Investigation and control of trade practices	77,803	98,971	98,971	--
4. Preventing misuse of customers' funds	133,681	110,347	110,347	--
5. Analyses and publication	114,313	120,968	120,968	--
6. Net cost of within-grade promotions	--	6,765	13,587	+ $6,822
Unobligated balance	3,595	--	--	--
Total	615,000	630,265	637,087	+ 6,822
Transfers to other appropriations as shown in budget schedules	--	+ 2,500	+ 2,500	--
Total appropriation	615,000	632,765	639,587	+ 6,822

WORK UNDER THIS APPROPRIATION

Objective: By carrying into effect the Commodity Exchange Act, to prevent manipulation of commodity prices, prevent excessive speculation by large traders, prevent cheating and fraud, require open and competitive execution of orders, prevent bucketing, and safeguard the handling of customers' funds; in general, to insure fair practice and honest dealing on the commodity exchanges.

The problem and its significance: Economical distribution of farm products is facilitated by the reduction of risks to merchants and processors through hedging operations in the futures markets. In the absence of hedging facilities these trade interests would have to assume speculative risks in actual commodities which could only be compensated by increased handling charges. Every farmer in the country is therefore vitally interested in the efficient and orderly functioning of the commodity futures markets.

Prior to the enactment of legislation providing for Federal supervision of the commodity futures markets manipulation, squeezes and corners were of frequent occurrence. The activities of the Commodity Exchange Administration have, however, largely eliminated those evils.

The impact of the defense program upon the agricultural situation has given new and special importance to the regulatory work of the Commodity Exchange Administration. While the regular activities of the Administration have been directed toward the efficient and orderly functioning of the futures markets, especial attention to excessive speculation has become imperative. The current situation requires the Administration to carry its regular activities farther and deeper than is done in normal times.

General plan: Working primarily through field offices in the trade centers, especially Chicago, New York and New Orleans, direct and acute surveillance is maintained over the transactions of large traders individually as well as upon all trading conducted on the commodity markets. The following are examples of work done during the fiscal year 1941:

1. Market designations, broker registrations, and exchange rules:
Futures trading was authorized in Pace amendment commodities, as follows: Chicago Board of Trade: soybeans, cottonseed oil, lard; Chicago Open Board of Trade: soybeans; New Orleans Cotton Exchange: cottonseed oil; New York Produce Exchange: cottonseed oil, soybean oil, tallow; and Memphis Merchants' Exchange Clearing Association: cottonseed meal, soybean meal. During the fiscal year 1941, 733 futures commission merchants and 623 floor brokers were registered, fees for which registrations totaled $16,926.

The rules and regulations and proposed rules and regulations of all contract markets were carefully scrutinized.

2. Supervision of futures trading:
Trading in commodity futures having an approximate value of $8,000,000,000 was supervised during the year. As a means of maintaining adequate surveillance over futures trading all clearing members of contract markets must report the total transactions and net positions in each future of a commodity every day and each large trader is likewise required to report daily upon his transactions and net position in each future of every commodity. These reports, which aggregated over 2,000 a day, were audited, tabulated, summarized and then carefully analyzed. They are the basis upon which most of the regulatory work of the Administration rests.

As the national defense program developed in scope and intensity it had an important influence upon agricultural prices. In an effort to adjust the futures trading system to emergency conditions the commodity exchanges were requested to cooperate in a program to improve controls over excessive speculative activity. Many of the exchanges, at the request of the Administration, raised minimum margins on speculative transactions. Surveys were made of the futures positions of all traders in certain strategic commodities. The results of these surveys were made available upon request to other interested Federal agencies, particularly the Sugar Division of the Agricultural Adjustment Administration and the Office of Price Administration.

3. Investigation and trade practice control:
Many complaints and alleged and apparent violations of the law were investigated during the year. Formal proceedings were instituted in eleven

cases. The charges included: bucketing, manipulation, misuse of customers' funds, maintaining false records, and trading in "puts and calls." Formal hearings before a referee were completed in six cases and five were pending at the end of the year. Of the completed cases five resulted in denial of trading privileges or revocation of registration and one was dismissed.

4. Protection of customers' funds:
To determine compliance with the statutory provisions requiring the segregation and prohibiting the misuse of customers' funds by commission merchants, 986 audits of the books and records of brokerage houses were made during the year. In no instance did the irregularities detected involve financial loss to any customer.

5. Economic analyses and publication of information:
In order to understand and interpret current futures price movements, general conditions of supply and demand and normal seasonal variations in marketing and stocks must be considered and weighed in relation to hedging operations and speculative activity on the futures markets. Analyses of the mechanics of operation of the exchanges and commodity brokerage firms, the nature and extent of participation in futures trading, and the function of futures exchanges in the marketing of agricultural commodities, afford a background for regulatory action and provide information for the public. Two general studies of the grain and wool top futures markets were published during the year.